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Havasupai Phonology and Morphology

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All the texts, tapes and citation materials upon which this analysis was based are at Archives of Languages of the World, I.U. Read the sources as, for example DW 11 p. 10: DW are the initials of the informant, in this case Dallas Wascagomie.

The roman numeral is the number of the text he gave me and the page is the page of my transcription of that text. Sometimes something like R51 occurs. This is the number of the reel that particular text is on. A T before the numeral is an abbreviation of text. All sources marked as C are from citation.

LS is Lorenzo Sinyella; HS is Harriet Sinyella, his wife; J is Josie Wahtohamogie; C is Catherine Uqualla. These were my mnformants for texts. They also were used for citation.

Other informants were Victor Wahtohamogie, Josie's son, Jim Wascagomie and his wife. Victor was my major informant for non-textual material. Of the informants that gave texts all were middle-aged except Catherine who was in her early twenties. Victor was 16-17 and Jim and his wife were middle-aged. These people all lived in Supai Village on top of the canyon about two miles from Grand Canyon Village proper.

1. The two classes of phonemes occurring in every Havasupai utterance are segmental and supra-segmental. A segmental phoneme is one in which some reference to its articulatory features must be made in order to define it. Supra-segmental phonemes are those whose definition does not critically depend on, but may include, supra-glottal articulatory features.

1.2 The consonant segmental phonemes are;

	Bilabial		Post-dental Pre-palatal		Velar		tal
Stops	p		t	Ĉ	k	q	?
Flap	·		ţ				
Nasals	m		n		ħ		
Fricatives	v	θ	S				h
Liquids			1		•		-
Semi- Consonants	W			y			

[t] occurred only in texts in three examples. It will be illustrated in 8.

1.2.1 The vowel segmental phonemes are:

Throughout this paper, read [@] as [æ] and [¢] as [v].

1.2.2 Typologically, the consonant series is asymmetrical in classification.

Classified as to obstruent-sonorant-laryngeal, there are eight obstruents (4 stops, 3 fricatives, 1 affricate); 7 sonorants (3 nasals, 1 flap, 1 liquid, 2 semi-consonants); 2 laryngeals (1 glottal stop, 1 glottal fricative).

Classified as to stop versus continuants, there are 7 stops and 10 continuants (3 nasals, 4 fricatives, 1 liquid, 2 semi-consonants) or 4 fricatives and 6 non-fricative continuants; or 11 non-resonants— stops and fricatives and 6 resonants— nasals, liquids and semi-consonants.

Classified as to point of articulation there are 4 labials, 6 phonemes in which some dental, apical or blade-alveolar features are used, 2 alveopalatals, 5 back phonemes—2 velars, 1 post-velar and 2 glottals.

Classified as to voiced—voiceless there are 8 voiceless phonemes and 9 voiced.

1.2.3 Havasupai has a 5 (+ 1) vowel system. All the 5 vowels occur under weak and primary stress. $/_{\theta}/$, the sixth vowel, occurs under weak stress unpredictably and very rarely under primary stress. In 2 examples in my corpus phonetic [$_{\theta}$] occurred under primary stress in connected speech and once in citation. The example in ctation is [$_{\theta}$ siléy $_{\theta}$] widow. (For examples in connected speech see 7.3.) Therefore, the 5 vowels contrast with [$_{\theta}$] in unstressed and stressed position. (I have only one example of free variation of $/_{\theta}/$ and $/_{\alpha}/$. See 7.)

The 5 vowel system is a common pattern in which there are front-back-rounded-unrounded contrasts at high and mid positions which in turn contrast with a low central to back vowel $/\alpha/$.

1.3 There are 2 classes of supra-segmental phonemes, fixed and free. Fixed must be written for grammatical and/or lexical reasons. (The three types of grammatical phonemes described below will define grammatical here.) There are 3 types of fixed phonemes. The first type of fixed phoneme is the first type of grammatical phonem and always occurs, except for morphophonemic rules, (1) With a given sequence of segmental phonemes, cut as a morphological word, without minimal lexical contrasts in citation or connected speech, or (2) occurs in either lexical or grammatical contrasts in citation or connected speech. (It will be shown, particularly with regard to length, that without prior knowledge of some citation forms or the morphological word in connected speech there is so much free variation in connected speech it would be very difficult to distinguish variations which are phonetic and those which are phonemic. See pp 77-78 for illustrations

of this. It means that morphemes which were minimally differentiated by length in citation were in connected speech either undifferentiated by length or similarly differentiated. This means that the signals bearing differentiating information in citation are not always the same in connected speech due to the amount of free variation and in connected speech some other signal takes over the function either as context or some other way.) The fixed phonemes described under (1) above are: /V/ unstressed vowel, $/\hat{V}/$, $/\hat{V}/$; the fixed phonemes described under (2) above are: $/V \cdot /$, /V/, unlengthened vowel.

The second type of fixed phoneme is composed of two supra-segmental features which are bound to each other. That is, this second type of fixed phoneme is composed of two supra-segmental features which have been observed to always occur together. The lexical significance of these phonemes is undetermined at this point. These phonemes are called terminal junctures $/\tau/$, $/\psi/$. They mark contour boundaries. This is the second type of grammatical phoneme.

The third type of fixed phoneme is not a composite of bound features nor fixed to any sequence of segmental phonemes. It is a phoneme and fixed by unmistakable contrasts in transitions from one phone to another. These are /+/, open transition, and /-/, close transition. The contrast of these juncture phonemes mark syllable boundaries. This is the third and last type of grammatical phoneme.

Grammatical contrasts are those exemplified by all these fixed phonemes except those phonemes described under (2) above, /V·/, /V/ unlengthened vowel, which are written because of lexical contrasts in citation forms. The others do not involve "meaning" contrasts in this sense, butare written because by their fixedness (type 1, first kind), boundness (type 2), or definite delimiting function (type 3) it would be clearly ungrammatical to write or substitute any other fixed phoneme in those environments in which any one

fixed phoneme occurred.

Reliable grammatical or lexical significance in this sense are the main characteristics of these fixed phonemes and which mainly distinguishes them from the free phonemes. 1.3.1 Free or stylistic supra-segmental phonemes are not fixed in any of these ways. These features in Havasupai do not appear grammatically or lexically contrastive in the sense in which "contrast" is used above but seem to substitute freely for one another in the same and different styles and phonetic environment. Obviously they are expressive features. However, since expressive contrasts deal with a very fluid and slippery area and since these features cannot be presented as phonemes only phonologically (without admitting some morphological information in their presentation) or in any of the ways mentioned for the three types of fixed phonemes they are not phonemes in a strict sense. But, in order to characterize sequences of phonemes between pauses, they are written separately as if they were phonemes in that sense. In 7.9 some contrasts will be presented indicating their expressive function.

The free phonemes are contour registers H)igh, L)ow, N)ormal, F)alling, F)alling N)ormal, F)alling L)ow. Emphatic length /V:~V:~V:/. Emphatic stress /V/. Contour stress /V/. I do not write degrees of silent pause phonemically. They are written phonetically as pauses from 1 - 3 short vowals. That is, a pause of two short vowels is written phonetically as 2. Also, hesitation is only marked phonetically with an H. Fast and slow speech is not marked. Some reference to it will be given in 7.9. The various pitches will be discussed in 7. There are 4 pitches from lowest to highest 1-4. 4 is emphatic pitch only occurring in HR contours. It may or may not occur with emphatic stress. It always, though, occurs with primary stress.

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A contour is any sequence occurring between any combination of pauses and which may display the following features:

- 1. May or may not occur with V.
- 2. Occurs with one of the registers which may or may not occur with \overline{V} .
- 3. Occurs with any least one \tilde{V} which may or may not occur with \tilde{V} , in the same contour.
- 4. Occurs with at least one terminal juncture.
- There are three phonological units in Havasupai: phoneme, syllable, and contour. (The word cannot be defined phonologically in Havasupai. Therefore sequences written between spaces or any references to a "word" assumes a morphological definition of a word as any morpheme which may occur alone.) The phoneme may be coterminous with the syllable but not with the contour. The syllable may be coterminous with the contour. may be bounded by /+/ or /-/.in combination or alone in combination with other contour markers. None of the features which occur with /+/ and /-/ and which may also occur at pause points (pitch-pause combinations) can signal syllable boundaries because as syllable boundaries change these latter features freely vary so much that they cannot be relied upon to indicate syllable boundaries consistently and unambiguously. (See 4. and 7.). Also with the exception of 1, which may freely vary with /+/, none of the other pitch-pause features, particularly $/ \uparrow /$, and $/ \rlap / \rlap /$, which occur in the same environments as /+/ and /-/, may substitute for every occurrence of /+/ and /-/ or vice versa. The occurrences of /+/ and /-/ medially rarely display any of the pitch-pause features common to the environments in which /4/ and /4/ and other supra-segmental features occur. (See 7.). Such substitutions then, would be clearly ungrammatical since they are not everywhere substitutable. Therefore, /+/ and /-/ must be kept distinct from $/\tau/$ and $/\psi/$ and other pitch-pause features. Because there is not this free substitution the syllable emerges as a genuine independent

grammatical unit which is optionally coterminous with the contour. Similarly, the contour emerges as a genuine independent grammatical unit. Medial and final are positions which are defined by this lack of free substitution of /+/ /-/ and /+/ // or other pitch-pause combinations in all their respective occurrences.

It is not possible to group /+/ or /-/ with any of the silent pause junctures or terminals even though they are in complementary distribution. That is, /+/ and /-/ only occurring at syllable boundaries medially in a contour, and pause and terminal junctures only occurring contour finally. Also a case for allophonic free variation is not valid even though pause and terminal junctures substitute for /+/ and /-/ at some syllable boundaries since a syllable may be coterminous with a contour. Once a grammatical unit such as the contour has occurred any other definite grammatical unit, syllable or phoneme, delimited by other junctures, /+/ or /-/, which are bounded by contour markers and where these contour markers are not everywhere substitutable for /+/ or /-/, necessarily grammatically contrast since one is marking a syllable boundary and the other a contour boundary.

By grammatical I mean recurrent sequences, which have occurred or could occur based on examplification of that specific sequence, in my corpus. By ungrammatical I mean any sequence I have not encountered, or do not think I will encounter, because I have no examples for it, in my corpus of connected speech which is in narrative style. (See 7.) for further elaboration of grammatical and lexical as applied to fixed and free phonemes. Particularly the last part of 7.2).

2. The following examples are all the minimal pairs for consonants, vowels and vowel length that occurred in citation. There is a minimum of 2 examples given for each contrast to suggest that a particular minimal pair was not the only one that occurred in the corpus. The occurrences of /?/

intervocalically in citation may occur as the following in connected speech: /V?V/ freely varying with /V?/, /V*/. (See 7. for examples.) /?/ freely varies with Ø initially, and /h/ varies with Ø finally. When /e/ or /e $^{\circ}$ / occurs here it is representing, as the norm, its allophone [e $^{\circ}$]. /e/ freely varies finally with [e/e/e/e. All the following contrasts are in an initial short open syllable dinder primary stress unless otherwise noted. All the writing here is phonemic. (See 8. for contrasts within the contour and allophone distributions.)

2.1 Stops contrast minimally initially and/or intervocalically.

p,t contrasts initially: pays all, tays a game; puke
to put something in something, tuke to burn.

k contrasts with t initially and p intervocalically and initially: kά?α interrogative particle, pά?α arrow; cipúka to bark, cikúka to kiss; hάτε dog, hάκε there.

c contrasts with p, t, k initially and k subminimally initially and minimally intervocalically: pi?i small metate, ci?i a fish; pike to die, cike to put it in, tike to turn into something; yαcε a seed, yαkε here; coqe a juniper tree, ko?o pinion tree.

? contrasts with p, t only initially but with k and c initially and before y: tike to turn into something, ?ike to say, pike to die; ci?i a fish, pi?i small metate, ?i?i wood. In the following? contrasts with q subminimally intervocalically: ko?o pinion tree, ?o?o fire, coqo juniper tree; wacyu they are sitting, wokyu he is sitting, wo?yu I am sitting.

q contrasts with p, t, k, c initially and with k initially and intervocalically subminimally: qwake a deer, kwake generic morpheme for metal; qace they are small, pace arrows; taeks to throw, caeks to miss, qaeks to hit; a contrast of q, k,?, initially is qote a fox, koe pinion tree, ?oe a fire; a subminimal contrast of q and k intervocalically is: coquiniper tree, yoke to get something.

Some other contrasts of stops in citation are? in contrast with p, t, k, c and additional contrasts of p, t and k, p, c and k, and p, k: há·?a cottonwood tree, há·ca cottonwood trees; hákə there, há?a water, hátɛ dog; pá·?aman, pá·pa potatoe, pá·ca men; pá·kə to slice meat thin and dry; ká?a interrogative particle, pá?a arrow; ké?ɛ interrogative locative particle, ?é?ɛ affirmative particle.

t contrasts only intervocalically with other stops: kwát a also, kwác knives, kwák knife, kwá?a metal; (ma) pápa potato, mapát a leg; píka to die, pít a only, pí?i small metate;

t, contrasts with t sub-minimally and minimally (for contrasts of t, with t and t and n see 8.) cite mother, pite only; kwate red powder from the rocks (homonymous with kwate also), hwate blood; ciyut ike to wipe, ciyutike to sink it in.

Contrasts of t and l are: məpátə leg, məpálə tongue; kwálɛ pinetree, kwáṭə also.

- 2.1.1 Fricative's con trast initially and intervocalically: sinyike to advance, hinyike to move; viyá·ke in front, siyá·ke branch of a tree; sáke to sting, váke (coming) here, θακ hακ there, (θ h in this morpheme in connected speech.) hwálke to dig, swá·lke to hope; h, v, θ contrast intervocalically: kwáve desert, kwáθe yellow, kwáhe the knife.
- 2.1.2 Among the nasals m and n contrast only intervocalically, and as second members of consonant clusters. n contrasts with n as first members of consonant clusters, and n with m finally: minkyu he is falling, minkyu you are falling; min you (goal), min you (nom).

- 2.1.3 Semi-consonants contrast initially: wá?a house, yá?a mouth; wáka to sit, yáka to be here.
- 2.2 The following are consonant minimal pairs (and some sub-minimal pairs) as to point of articulation.
- 2.2.1 Labials, p/m, v, w. p contrasts minimally with m, v, w initially and intervocalically: pi?i small metate, mi?i boot; nəpi·kə FaBr, nəmi·kə FaSi; pikə to die, wikə to do; pi?i small metate, wi?i stone; nəwi·kə a relative, nəpi·kə FaBr; tikapikə to gather something, tikavikə to be gathered (v-w here); pakə to slice meat thin and dry, vakə coming here.

m contrasts minimally with v initially and medially before k.

It contrasts minimally with w initially and intervocalically: miyáls

bread, viyáls to be in here; spóvke to be insane, spómke to remember;

newiéke a relative, nepiške FaSi; mí?i foot, wí?i stone.

v minimally contrasts with w initially and intervocalically:

vákə coming here, wákə to sit; má·vɛ food, má·wɛ he is eating.

2.2.2 Dental to alveo-palatal t/l, n, s, θ, y. t contrasts with l intervocalically and as a first and second member of a consonant cluster:

tátə rough, tálə father; θυντίκə a cup, θυνlίκə a hole in the ground;

cúlkə to blow, cútkə winter; t contrasts with n initially sub-minimally and intervocalically: hátɛ dog, hánɛ good; tá·wkə to slap, ná·wkəkə to jump; t contrasts with s and θ only initially: tíkə to turn into something, síkə to read; sálə paw, tálə father, θálə in there; túvkə to dry, θúvkə to be bent; t contrasts with y initially and intervocalically:

tá·mkə to throw it over there, yá·mkə to go; hátɛ dog; háyə water.

l/n, s, y, c; l contrasts with n intervocalically: milú·nə cantelope, minú·nə stomach; háns good, háls in there; l contrasts with s intervocalically and as the first member of a consonant cluster: yúskə to be cool, yúlkə to feel something that's inside; məsə·kə to fear, mələ·kə to smile; l contrasts with y only intervocalically: háyə water. hálə in there; sáyə fat, sálə paw; yács séed, yáls in here.

n/s, 0, y, c; n contrasts with s, 0, y, c initially and intervocalically; vənûkə to be doing something, vasûkə green or blue

(this is sub-minimal); sáhikyu its breathing, nəhikyu its dead; nə whəkə to jump, 0 wkə to have a little one; nálkyu it's born, 0 álkyu it's in there; háns good, háyə water; yamitə mountain lion, namitə bob-cat; háns good, hács water; cá·mkə to miss, ná·mkə to crush (I'm not sure of the length on ná·mkə,)

s/y, c; s contrasts with y and c only initially: yúlka to feel something that's inside, súlka to mess it up; sála paw, yála in here; siyá·ka branch of a tree, ciyá·ka a bone; síka to read, cíka to put it in; 0/y, c: 0 contrasts with y and c only initially: 0 ka there, yáka to be here; 0 o qa leaf, có·qa grape; y/c: y contrasts with c intervocalically and initially; móya milk, má·ca they are eating; cúlka to blow, yúlka to feel something that's inside.

2.2.3 Contrasts of k, q, ?, have been given in 2.1. n, k, h, ? contrast before y: 0 vyu you're drinking, 0 vyu he's drinking, 0 vyu I'm drinking, 0 vyu you're drinking; h, k, ? contrast initially: háta dog, káta sunflower; há?a dress, ká?a interrogative locative part, 16?a affirmative particle; h contrasts with q initially: qáca

small pl., háce water; qốt e a fox, hú ?u wing (sub-minimal); ? contrasts with q only sub-minimally intervocalically: cé qe grape, cá ?a top; cốqe juniper tree, kố ?o pinion tree.

There are no minimal pairs for some of these phonemes. For example, none for 1, θ ; η , θ ; η , q; q, t; t-s, n; s, η . All of these pairs are members of different point and manner classes except the first and next to the last which are members of the same point class but different manner classes.

These phonemes are grouped separately because of the following reasons. No phonemes which do minimally contrast as to manner and/or point class have allophones outside of their mammer class except those which freely vary with phones which never occur in any other positions (q and x freely vary intervocalically and v and b freely vary initially.) The direction of the phonetic symmetry of the allophonic system is to keep all allophones within the same manner class, i.e., in the allophonic system of C in Hav. phonetic similarity means similar manner class. Phones outside of the same manner class are not considered phonetically similar. Some sub-minimal pairs are: t/-s,n and 1,0, mépate leg, dipásike outside; mésilay widow, hwát, a red stuff; ciyút ika to put it in, yús(a)ka to be cool; háns good, kwát a also; milúna canteloupe, mapát a leg; yúnikyu he is also coming, ciyút ika to put it in. Also 1 contrasts with 0 subminimally initially before a primary stressed short vowel: ὶτθikə ____ θύνκο bent; lápiko to crush, θάνίκγυ it's there; láhiko to have a cold, 0Śnvika

In all these examples there are some parts of the environment which are different so that by listing the differences these phones could be in compl. dist. However, from only these examples, (and other similar ones) each phone would have complex and involved distributional statements, and each phoneme would have an allophone occurring in approximately the same position but not a member of the same manner class.

- 3. The following are minimal pairs for all vowel phonemes.

 3.1 a/i,u,ɔ,ɛ, wikə to do, wákə to sit; mikə to cry, má·kə to eat;
 hú?u head, há?a cottonwood tree; hlú?u pipe, hlá?a month; hló?ɔ
 rabbit, hlá?a month; ká?a interrogative particle, kó?ɔ pinion tree;
 viyá·mkə to run, viyé·mkə to be healed; hé?ɛ dress, há?a water;
 i/uɔɛ: tikə to turn into something, tikə to burn; pikə to die, pikə
 to go in; ?i?i wood, ?ó?ɔ fire; cikə to putit inj cɔqə juniper tree
 (sub-minimal pair); tikə to turn into something, tɛkə to be big many;
 ?i?i wood, ?ɛ́?ɛ affirmative particle; u/ɔ, ɛ; hlú?u pipe, hlɔ́?ɔ rabbit;
 yú?u eye, yɔ́?ɔ tooth; hmɛkə to be brittle, hmukə three; hɛ́?ɛ dress,
 hú?u wing; ɔ/ɛ: spɛkə to lean something against a tree, spɔ́kə to
 know; ?ɛ́?ɛ affirmative particle, ?ɔ́?ɔ fire.
 - 3.2 Contrasts of length with a, i, u, pare presented here. Length is written as a separate supra-segmental phoneme. There are not six short V and six long V. There are just six phonemic vowels which co-occur with length written as a diacritic / ·/. Reasons for this and why length is not written as geminate V will be given later in 7. há?a water, há?a cottonwood tree; máks to be ready to eat, mák to eat;

yá·kə in front, yákə to be here; yú ?u eye, yú · ?u owl; hú ?u wing, hú. ?u head; wika to do, wi ka to own something non-living; mi kyu he's crying, mikyu it's a foot; yó. ? mesquite pod, yó ? tooth; yóka to get something, y5·ka to make-pick; for contrasts of ε/ε, see section 7. a never occurs lengthened. Its allophone ae always does. (See 7.) æ · is always lengthened except in stylistic free variation. 4. Before proceeding to delimit phones, it is first necessary to justify the use of junctures /+/ and /-/, as the primary criteria used to define and delimit the syllable, since the basis for phone delimitation is in the case where phone and syllable boundaries are coterminous. 4.1 The occurrences of vowels (I am assuming canonical shapes have beendefined for the sake of this section) or vowel sequences, suprasegmental features such as stress, pitch, length or any combination of these, have been used to define the syllable and possibly the phone. Also distributional possibilities of segmental phones with and without supra-segmental features have been used to delimit the syllable. For example, if a particular C1C2 sequence occurs finally and medially but not initially in the contour or syllable and C1 may occur initially and finally, and C2 initially, the C1 is either the closing consonant of one syllable or the initial consonant of the following syllable. It will be shown that this either or puzzle posed by C1, of distributional information cannot by itself indicate syllable boundaries unambigously in Havasupai. Nor can supra-segmental or other information but junctural indicate syllable boundaries unambigously.

See Hockett, pp. 51 ff. Manual of Phonology and 5.5 here.

4.2 In 4.2-5 approximately 55 examples are given to show and describe the ways in which distributional or other criteria other than junctural fail to account for syllable boundaries consistently and unambiguously.

Therefore, /+/ and /-/ are set up as fixed phonemes.

In the following CVCV illustration, $a/\pm/$ occurs in the sequence $[mi\cdot]$ in either (a) or (b) below. No translations are given in this first part. (In the following, undotted i is written as either [1] or [ι].)

The following examples were taken directly from texts. The numbers to the immediate right or left of slashes are degrees of silent pause. The numbers above the segmental phones are pitches.

- (a) [1 clmi·clk 3] Text II J p 5.
- (b) [1 clmi·clk 1] LS, p. 4.

[m] may occur finally in the contour and syllable following an unstressed [1] in the same sequence [-clm]. Medially, it may occur before [i·] and [i] and other phones not [c]. Initially, it may occur before [i·] and [i] and pre-finally it may occur before [i·] and [i] following an unstressed vowel. Finally after [V]:

- c. [1 gwáe·wlk kakúclm 2] SR p. 4
- d. [1 qéctam 3] CUIC

Prefinally before [i] and [i] and after [V]:

- g. [l nyúva yú hamí· 3] p. 18 LS
- h. [2 náhami] p.5 J. II

Medially before $[i \cdot]$ and [i]:

- e. [2 nylmi.tac] BUF. p. 1
- f. [2 tu mitəmitəmam 1] PW p. 5

Initially before $[i \cdot]$ and [i]:

- i. [2 miclm micehêm 2] J. II p. 8
- j. [1 mi·k 2] BUF p.

Examples of [i] and [i] medially and finally have been given.

- [i] and [i·] occur initially:
- k. [2 i.clk 3] SR p.
- 1. [2 ísakoya kingwá yahá 1] SR p.5

The distributions of [m] and [i] and [i] in combinations or separately in examples c - l are maximal. That is, they cover all the occurrence possibilities. For example, [m] occurs finally but it also occurs initially and [i.] may occur initially but also finally and medially. Therefore, the distributions of these phones are maximal and ambiguous: They are so distributed that no occurrence can unequivocally indicate where syllable boundaries should be placed in (a) or (b). Obviously, distributional information cannot indicate unambiguously where a syllable boundary could be placed in the sequence [mi·] in (a) or (b). Also the occurrences of [m], [i•] and [i] alone or in combination in c - l, with respect to supra-segmental features, are maximal. In c.- l, they may occur under the same stress conditions as they do in (a) and (b). Similarly, their occurrences with length are maximal and, more importantly, ambiguous. In i. and j., [m] occurs initially before [i] and [i·] and in k. and l. [#i] and [#i·] occur. However, in both (a) and (b) the vowel is lengthened. Similarly, degrees of pause and pitches not $/\pi/$ or $/\sqrt{}/$ occur ambiguously as free phonemes which substitute freely for one another; but even ignoring

this free variation, their occurrences in (a) - 1. are just as ambiguous as is the distributional or supra-segmental fixed phonemes. Finally, even any combinations of these criteria would be ambiguous in cases such as these where maximal occurrences of phones are shown distributionally and supra-segmentally.

4.2.2 In the following CVCCV sequence the syllable boundary should be marked between or after [1] and [k] in (o) and (p). The following examples give all possible conditioning factors for predicting syllable boundaries in the sequence [lk]. The sequence [lk] may occur medially and finally but not initially.

[lk] occurs finally:

m. [kloát lc l nylmi:lk 2] Buff. p. 6

n. [1 waé:1k 1] SR p. 2

Medially as [lk]:

(o) [l k kəwaé :lkəvávayú l] LS p. 5

(p) [1 ny lhámi:lkác láva l] SR p. 17

[k] may occur initially before [ə] and [i]:

q. [l kəm moəm l] LS p. 4

r. [1 ka?5.t lvin 1] SR p. 2

rl [kiclmysk] p. 9, 5C

r₂ [l kići kovlm l] p. 8 LS

[kə] may occur finally:

s. [2 yám kwas kvtív l máka 2] SR p. 11

t. [l hwákə l] Jl p. l

[a] and [i] may occur initially:

- u. [3 əpácuv sí.clk 2] SR p. 5
- v. [ləvoklm nyúnyAEH] H.S. Laun p. 14
- v₁. [l icikic lm l] BS p. 20
- v2. [2 isəkəyə 1 kingwa yəha 1] SR

[I] may occur finally after [V] and [V]

- w. [1 kweca?há:v71 1] PD p. 4
- x. [l hakeiel l] LS p.

[ki] may occur medially but not finally:

- y. [licikiclm l] BS p. 20
- yl. [2 icokiny l] SR p. 7

From these distributions of [1, k], which are again maximal, or near maximal, with regard to occurrences supra-segmental or otherwise, it would be difficult to decide where the syllable boundary is to be placed in (o) and (p) in [1k]. It could not be before [1k] since the sequence [1k] does not occur initially. This much distributional information can indicate. However, distributional and other information cannot indicate if the syllable boundary is to be placed between or after [1k].

[1] may occur finally, (w,x), and [k] initially before [ə] and [i], (q,k), and medially before [i] and [ə], (y,), (see (o) for [-kə-]); [i] and [ə] may occur initially, (u, v,) and [æ] and [i:] precedes the sequence [lk] when final and medial (m, n,o, p,) These distributions are obviously maximal and therefore ambiguous with regard to the placing of syllable boundaries in (o, p.)

4.2.3 Now the total environments for [1] and [k] are sub-minimal in most of these examples, although in (m, n, o, p) the immediate environments are minimal. There are no examples in the corpus of [i] occurring initially in the whole sequence *[#icitava l] (p), and [a] occurring initially in the whole sequence *[#avavavyú 1] (o). On the other hand, there are no examples here of [1] occurring finally in [*mi:l#] (m). [wae:l] (n) may occur finally: [1 kyūklmɔwae:l 2] BS p. 2. But [*kawæ:1#] or [*nylhami:1#] do not occur nor do the sequences [*vî: l#] or [*væ:l#] occur. Even if [i:] and [æ:] had unambiguous distributions, the total sequences as described above could not occur. Even if *[mi:l#] occurred, [#k#] doesn't occur, and [#i] and [#ə] both occur. [k] occurs initially in [#kici], (r,) and [#ka], (q), but not in *[#kəvavayu 1] or *[# kicitava 1]. Therefore, even if the distributional environments were broadened, in any respect, placement of syllable division would be just as confusing. With just this distributional and/or supra-segmental information, which of the occurrent and/or nonoccurrent sequences are more important? That is, since the whole sequence *[#icitiva] (p) and *[#əvivivyu] (o) do not occur, by a distributional criterion, the syllable division could be placed after [lk] in (o, p). But [wae:l#] (n) does occur and *[mi:l#] (m) doesn't. This, then, would indicated a syllable division after [1] in (p) and a syllable division after [k] in (p). The total sequences *[kawæ:l#] and *[ny lhámí:1#] do not occur, but [i:] and [æ:] occur initially. Now, for example, is the non-occurrence of *[kawæ:l#] more important than the occurrence of [wae:1# for syllable placement in (o)?

And, is the non-occurrence of *[mi:l#] and *[nyihami:l#] more important than the occurrence of [i:] initially in trying to decide by distributional criteria where a syllable division is in [lk]? There is no way of knowing merely by the information given above. Simple, simpler, simplest solutions are considered irrelevant. Because of the nature of the material the linguist deals with, there can never be a general and rigorous definition of simplicity; only ad hoc ones. Simplicity defined in terms of number and complexity of rules or units is too arbitrary. Ultimately, simplicity will have to be defined somehow in terms of the speaker as encoder or decoder.

segmental criteria is much too arbitrary and inconsistent to indicate syllable boundaries. This is due to the low redundancy encountered in connected speech when long sequences are used to define units such as syllables where the environment (syllable boundary) is so limited.

Ambiguous and contradictory examples could always be given. This meand that the longer the environment, the more the amount of phone and phone combinations that have to be taken into account. When the potential number of phones for any given environment increases, the redundancy becomes lower. Hockett Manual, pp. 51 ff, has defined and delimited syllables using juncture (see 5.5 for the justification of /+/ and /-/) and also without juncture. However, in the latter case where there were no actual contrasts of juncture, he assumed supra-segmental features, stress, tone, or segmental vocoid, indicated syllable boundaries. However, how could stress or any other such

feature define a syllable without first knowing what a syllable was? That is, known by some other information, of course - junctural, the stress, or tone, are only secondary characteristics of the syllable unit actually defined by some other means. I mean here that without some idea of a syllable, defined by some other means, to say that stress or tone defines a syllable indicates that one knows what a syllable is before it has been defined. Once a syllable has been defined and delimited then such features as stress are secondary characteristics. They never can be definitive. That would be circular. I don't want to get into a philosophical discussion about definitions. This seems pretty clear to me: Contrasts of open and close juncture have been shown to delimit a unit sometimes larger than the phone and smaller than the contour. Sometimes the boundaries of this unit, the syllable, is coterminous with phones and/or contours and sometimes not. I arrived at the syllable unit because of the contrasts. How does stress or any other feature delimit units? They obviously can't, and to say they define them is circular. (See 5.5 for other references to Hockett). The only signals of syllable division in (a, b) and (o, p) are the different type of transitions between [m] and [i·] in (a) and [m] and [i·] in (b). In (a) the transition from [m] to $[i \cdot]$ is characterized by a smooth transition when compared and contrasted with (b) in which there is a slight interruption or pause in the flow of speech and a hold on the[m] not present in (a). Therefore, (b) is marked syllabically as (b) [clm+i.clk] they always said that, and (a) as [clm-fclk] they put it there. In (o, p), the transitions from [l] to [k] and from [k] to [i] and [ə] are

different in the same ways. There is the same smooth transition described for [mi.] in (a) for [k] to [i] and [a] in (o, p). But the transition from [1] to [k] in (o, p) is marked by an interruption of the flow of speech, or a short pause, which characterized the transition from [m] to [i.] in (b). This pause contrasts with the transitions of [m] to [i] and [k] to [i] and [ə] in (a) and (o, p) respectively. Therefore, the syllable boundaries in (o, p) are marked between [1] and [k], as it was for [m] and [i] in (b), as [...wae:ltk ...], [...i:likici...]. /+/ and /-/ in (a, b) (see succeeding sections for more) are distinctive only because of the contrastive pairs, because in the same canonical shape environment there are phonetically different types of transitions and no other criteria can signal syllable division. If only one occurred to the exclusion of the other there would be no basis for distinguishing / +/ and / -/ and for setting up juncture. This is one of the main justifications for / +/ in Havasupai. It is also one of the main reasons for Hockett's division of systems with juncture and systems without juncture.

Now since there are no examples here of [CVCC+V] a general rule could be given that in sequences of [CVCCV] and, more particularly, in [...mi:lk] and [...waxlk] a syllable division always occurs between the [CC]. But it is obvious that such a rule could not have been formulated from any other criteria but junctural. We know such a rule because of the juncture. (The rule could be stated in terms of distributional or supra-segmental terms but prior knowledge of juncture placement must be assumed. Even in systems without contrasts of /+/ /-/, systems without juncture, juncture is still distinctive.)

This means that once syllable division is formally determined by open/close contrasts, we may then give rules for syllable division in terms

of distribution etc. but we could not give these rules without knowledge of juncture placement. Therefore, while [CVCV] sequences, and more particularly [...mi...], may have any one of three (ambisyllabic-nonambisyllabic contrasts are given in succeeding sections) syllable divisions:) $[C_1V.C_2V][C_1VC_2.V][C_1VC_2.C_2V]$, by these examples, in medial CC sequences in which the CC occurs finally and medially but not initially, there is a syllable boundary between the [C,C]. Such rules may or may not have to be modified but as far as these examples are concerned only junctural criteria could decide where syllable boundaries are in (o, p) and (a, b), and in (a, b), /+/ and /-/ must be written since there are minimal contrasts there while in (o, p) they need not be written as far as these examples are concerned. 4.3 Since no other examples were given of (possible) contrasts of /+/ and /-/, they are only written in the segmental sequences in which they minimally contrast ([mi.]) and in [lk] a general rule could account for them. These, though, represent only two ways in which junctural information relates to other information in Havasupai: 1) in (a, b) minimal pairs where the distribution of the phones in slots and with respect to supra-segmental features was maximal and only juncture could indicate syllable boundaries and had to be written. (Minimal pairs do not prove that a / +/ must always be written since where there are no minimal pairs, the / +/ may be predictable. By giving so many examples, I am showing that rules for predicting / +/ are not economical.) 2) (o, p), where only juncture could indicate boundaries again, but the environments were sub-minimal and the

placement of juncture was similar in both cases and syllable division could be accounted for by a general rule.

Therefore, whether or not juncture must be written, it is always the most essential criterion here for determining syllable boundaries. Most other criteria, in instances where juncture need not be written, are very arbitrary (see 5.5).

There are two other kinds of relations of junctural and other information logically possible which also occur in Havasupai: 3) single non-contrastive examples in which distributional and other information is unambiguous and clearly indicates a syllable division not supported by junctural information and 4) single non-contrastive examples supported by junctural information.

- 4.3.1 Examples of 3) are:
- a. [l kčkúc lm l] a place SR p. 4
- b. [1 spovimke 1] he remembered LS p.
- c. [1 têv5·k 2] he raped her BUFF. p. 7
- d. [nyîtúk 1] school R5 J12
- e. [1 nyuwaé · lkúkilinyə 1] they dig around and see worms p. 6 DWt2
- f. [l přídovtík 2] only that... J text p. 8
- g. [l myltúvlm l] when it dries 7c p. 9

The sequences in question are: a. [kú]; b. [ví]; c. [ví];

d. [tú]; e. [kú]; [kǐ]; f. [dó]; g. [tú].

a₁:[ú] may occur initially in the same sequences as a. and [k] may occur finally: a₁₁ [1 úc lm 1] they see it LS p. 11 a₁₂ [3 kdk 1] negative particle LS p. 15.

[kú] may occur initially but not in the same whole sequences as in a. ([*#kúc] does not occur). a₁₃[> kút¢v 7] long ago LS p. 14

b. [v] may occur finally. See al and [hamkwatatev l] the barbed wire there, SR p. 9

(bil). [v] occurs medially in the same sequence to its left in b.: [J tu spόνε mî l] is it just simple or... p. 9 Jl, There is no reason why [spóν] could not be said to occur finally, although in the corpus there are no examples of it doing so. But the placement of the silent pauses is really a matter of selection and could occur after [spóνε#] or [spóν#].

[v] does not occur as [#vinkə] nor does [#i mkə] occur. [i] may occur initially in other sequences:

b₁₃ [l lm3y l] conjecture particle LS p. 6. b₁₄ [levic l] worms DW p. 5 (planting)

[vI] may occur initially but not in the same whole sequence:

b₁₅ [1 vInlmák 2] he left there BUFF p. 7. The sequence [spó] only occurs before [v] (see b₁₂) when it isn t occurring before [v], it is [spó]: b₁₆ [1 spóce tav 3] they really know p. 7 J 1

c. [v] in c. may occur finally. See a_1 and b_{11} . Note the sequences preceding [v] in c. and a_1 , b_{11} are similar, $[t \not v]$. [5·] may occur initially but not in the same total sequence as in c: c_{11} [30·15nc 3] horses SR p. 2. [v5·] may occur alone in the same sequence: c_{12} [2 v5·k 2] I came home LS p. 10. [t $\not v$] may occur alone: c_{12} [1 t $\not v$] just... IC p .

d₁ [t] in d. may occur finally almost in the same sequence to its left: d₁₁ [liciyît₃] PW p. 7 text 2. That's what it means. [tú] may occur initially: d₁₂ [ltúclk₃] they burn it CU 5c. p₃, [ú] may occur initially in the same sequence: d₁ [3 úk 1] I saw it J₃, p. 10.

e₁ [1k] occurs finally in the same sequence in e, (m, n) and medially in (o, p). In d₁₃, [u] occurs initially in the same sequence in e.; and another example of [uk] finally is: e₁₁ [1 nyuvyūk 2] it's like that LS, p. 1. [i] may occur initially before [1]: e₁₂ [1 ilavic 1] worms D\ t^2.

- f. [d] may occur finally but not in the same sequence as in f.:

 fll [3 nylcéctdl] we lived there in the winter. p. 41 C. [5.] may
 occur initially but not in the same sequence, see cll. [dé.] does not
 occur initially.
- g. [t] may occur finally almost in the same sequence to its left in g, see d_{11} . [ú] may occur initially, but not in the same sequence, as in g. see d_{13} and a_{11} . [tú] may occur initially but not in the same total sequence as in g. See d_{12} .

The following is one example of case 4). The sequence in question is [k5.]: a. [kdk5.] inc 1] no horses SR p. 4.; al. [k] may occur finally in the same total sequence: all [3 kdk l] negative particle

LS p. 15. [5.] may occur initially in the same total sequence: all

[3 5.lone 3] horses SR p. 2. [k5.] may occur initially but not in the same total sequence: all [1 kom 0 am 2] coffee 9L p. 5.

4.3.1 In 3 a, all the distributional and other information points to a / +/

syllable break (kak and ic lm occur alone) similar to the one in (b),

between [m] and [i·]. However, the transition from [k] to [ū] in 3a is similar to [mi·] in (a) and [ka] and [ki] in (o, p), where /-/ occurred. That is, although distributional information indicates unequivocally a syllable division between [kū], in 3a, juncturally there is no division there and 3a is marked as [l kūk-ūclm l] a place. Of all the examples in 3, 3a is the most extreme example of the conflict of junctural and other information, not lexical. Lexical information, or the meanings of these sequences, could be of some help in finding syllable boundaries without using juncture. This is true of cl2 and cl1 and also 4a, 3a. In the majority of cases, though, even meaning cannot indicate these boundaries unambiguously. Anyway, I could have omitted the translations as I did in (a, b).

3b-3g display varying degrees of the conflict of junctural and other information, and the less any one of these examples is like 3a in the relationship of junctural and other information the more ambiguous and inconsistent this other information becomes. They are listed from more or less like 3a below. 3c is most like 3a and occurs with a /+/ as $[v+5\cdot]$. 3e is also marked as [lk+4], [k+4]. 3d and 3g are also marked as [t+4]. 3f is also marked as [d+6]. Finally, 3b also occurs with a /+/: [v+4].

In 4a, distributional and junctural information agree, and 4a is marked as $[k+5\cdot]$. In Jb, f, the distributional information was as ambiguous as in type 2), p. 22. Je, d, g were more like 4a in that the distribution weighted heavily in the favor of a syllable break which was supported by juncture. These examples were contrary to Jc and

3a in which the distributional information strongly indicated a division which was not supported by junctural information.

4.3.2 In all of these examples, except (a, b), there were no pairs given which showed at least sub-minimal contrasts of /+/ and /-/. That is, in (o, p) there is [l+k], but not [l-k]. In 3a there is [k-u] but not [k+u]. In 3d, [t+u] but not [t-u] and so on. Just from these examples some rules could be given to account for all the occurrences of /+/ and /-/. That is, 3a is always [k-u], the sequence [tu] is always [t+u] medially, since there are no contrasts here, and so on.

Such rules could be established, but they would clearly run counter to a pattern established in the corpus given up to now and which, without more corpus, could be applied to sequences not given thus far. This pattern is that in all the cases where /+/ occurred in a CV sequence (or a C_1C_2 sequence), all the C_1 phones occurred finally and all the V and C_2 phones occurred initially. Distributional information thus correlates with junctural information in this respect: that there will be /+/ -/ contrasts in CV and CC sequences when the 3a, 3b, or 3e patterns are established, but just when and where only juncture can tell.

That such a pattern is indicative is substantiated by the following examples: [k-u] in Ja may be [k+u] or [k-u]: [l kuwék+űvlm 2] you can see where it's deep, Buff, p. 5; this has V+V and is different than Ja in this respect but the following has the same stress pattern...

V+V: [l qéctlk+űk l] when I was small I saw... text p. 51 J.

[v-1] does not occur medially, so [v+1] in 3b would stand.

[v+5·] in 3c may be [v-5·] in a minimal pair: [1 tev-5·k 1] I just came home LS p. ii, versus [tev+5·k] he raped her (3c).

[t+ú] in 3d may be [t-ú]: [1 vatúny lm 2] when it gets hotter DW p. 8, text 2; 3d was [nylt+úk] school. In 3g there is a minimal pair for this same morpheme: [1 nylt+úv lm 1] I go to school BS p.33, and (3g) [1 nylt-úv lm 1] when it dries 7c, p. 9; Je contrasts with (op) subminimally; [k+ó·] in 4a may occur as [k-ó·]: [2 isə kó·yə...]

In the cases of a, c, d, for example, the pattern referred to above is evident. Yet there are only minimal pairs for a, d a, b); The rest are sub-minimal. These three could be listed and the rest accounted for by rules.

We could account for /+/ in [ku], just with this corpus, by the rule that /+/ occurs in this sequence only in $[\hat{\mathbf{V}}+\hat{\mathbf{V}}]$, or /-/ occurs only in $[\hat{\mathbf{ak}}-\hat{\mathbf{u}}]$ and /+/ occurs everywhere else. In 3d, in the minimal pair, /+/ must be written, but for contrasts of [vatunylm] and $[1\text{ qat}+\hat{\mathbf{u}}\text{tike} \ 1]$ short j.: Basket, a rule that /+/ only occurs in $[\text{at}+\hat{\mathbf{u}}]$ must be given. Also for 4a a rule that /+/ occurs in $[\text{ak}+\hat{\mathbf{s}}\cdot]$ must be given.

However, other contrasts and examples can be found for all these cases: [1 kwak+unyll 1] in the pan 9c, p. 9. Therefore, the rulefor 3a would have to be broadened to include more phones: only in [ak-uc], or [ak+u] since [ak+u] occurs here. Rules for 3c would include two more: [tutev+5·v] just tired LS, p. 15, and [1 tucev+5tav+5? 1] almost died RJI text 3].p.s. That is /+/ occurs only in [v+5·t] and [v+5·v] and [v+5·t].

For 3d: [1 ny¢t+úc3 smác3 1] a school where you sleep (dorm).

text 2 DW 5d. In this example the morpheme is the same as 3d but

[*1] in free variation and [-c] is a suffix replacing [-k]. Therefore,

any rules involving segmental phones would have to account for all

the free variation and morphological changes as well as just exceptions. Since there is a minimal pair with one [t+u], these would have to be listed, [+] occurs in [t+uk] and [t+uc]. The other alternative is to list the whole morpheme.

As more corpus keeps coming in more rules need to be added.

For 4a, since there are more occurrences of / +/: [nyuk+**wav 2] we

lived here, BS p. 12; it would be simpler just to list the occurrence of

/-/ as [ak-5.]. But there occurs [1 payak5.pany 1] they are all put in

beds DW text I p. 8. Therefore /-/ also occurs in [yak5.] and there

is a contrast of [ak+5.] in 4a.

4.3.3 These rules, then, are those minimal rules required to account for all the occurrences of /+/ and /-/ in just these four examples and only in CV contrasts. There would be nine rules needed which do not include the two minimal pairs. Also no rule includes just one phone but sequences of phones. It is evident that in sub-minimal pairs the rules accounting for /+/ or /-/ would be too cumbersome and involved. This is only a small corpus and it is highly possible that other rules would need to be added. It is one of the purposes of this section to show that the pattern described above concerning the final and initial occurrences of CV and C_1C_2 is indicative of the type of corpus for which the nine rules must be formulated. It would have been much simpler to decide on the phonemic status of /+/ and /-/ by that pattern than by listing all the examples, minimal or otherwise.

Since no pairs were given for $\Im b$ and $\Im f$, these could be listed and added to our rules: /+/ occurs in [v+1] and [d+6]. However

since [lk] occurs as [lk+] in β e and sub-minimally contrasts with (o, p) β e should be listed: /+/ occurs in [lk+ \hat{u}] and also [k+ \hat{i}] in β e.

All in all there would be thirteen rules needed to predict / +/
or /-/ here and then / +/ would be written in the minimal pairs. If
this is any indication of the number of rules meeded for the same amount
of any future corpus, or even a proportion of half the rules to the same
amount of future corpus, there would be too many complex rules.

There is another possibility for predicting / +/. In 4a, 3 e, Jd, a, 3f and the first / +/ in [1 túc¢v+5·tav+5·?1], / +/ occurs at word boundaries, or flanking sequences which can occur between silent pauses 2 or 3. We could formulate a general rule that / +/ occurs potentially at word boundaries. But this would be contradicted by all the examples in which / +/ occurred within words: Jc, Jb, second / +/ in the example just given, 3f, [qət+útikə], [tutəv+5·v]. If such a rule were given and since "potentially" means that / -/ occurrat word boundaries as well as / +/, in a strict sense, some list of all the morphological words would have to be given because these whole words then, by the rule, are the conditioning factors for / +/. Of course, this would be more complex and still wouldn't account for all the occurrences of / +/ within words.

This would involve a morphological definition of the word (listing all those occurring alone) and for a phonological definition of the word in Havasupai, a / +/ would have to be written because it would be one of the indispensable features in its definition.

Nor can the actualizations of the segmental phones flanking / +/
be held as a conditioning factor, because these phones, or allophones,

only display certain phonetic features at /+/ and therefore are conditioned by the occurrence of /+/ and not vice-versa. It really doesn't matter what the phonetic differences are of phones occurring at /+/ and then elsewhere since they are too fine to be significant. The important point is not their phonetic differences in different environments, but the fact that /+/ is conditioning them and hence /+/ must be written when they occur.

If words cannot be used to predict / +/ or /-/, then the possible combinations of C₁ with C₂ and CV, medially, becomes higher since not only IPS within words but also between words would be involved. Therefore, as these possible combinations rise the possible occurrences of /+/ would rise, I do not know by what proportion, and also would the number of rules needed to predict /+/ or /-/ using junctural or other information.

I believe I have considered all the possibilities for predicting /+/ and all of them fall short of accounting for the occurrences of /+/. (It should be noted that 3 of the characteristics of systems with juncture in Hockett's approach occur here:) The contrasts of [C+V] and [C-V] in (a, b) and the other CV minimal and sub-minimal pairs given; 2) the contrasts of $[C_1C_2-V]$ and $[C_1C_2+V]$ where C_1 occurs finally and C_2 initially. These latter contrasts, I believe are Hockett's interludes. The last characteristic of systems with juncture are ambi-syllabic and non-ambisyllabic contrasts to be discussed in succeeding sections.)

It would be much simpler to approach / +/ and syllable division from the pattern described above. That is, in any sequence of phones,

only display certain phonetic features at /+/ and therefore are conditioned by the occurrence of /+/ and not vice-versa. It really doesn't matter what the phonetic differences are of phones occurring at /+/ and then elsewhere since they are too fine to be significant. The important point is not their phonetic differences in different environments, but the fact that /+/ is conditioning them and hence /+/ must be written when they occur.

If words cannot be used to predict /+/ or /-/, then the possible combinations of C_1 with C_2 and CV, medially, becomes higher since not only IPS within words but also between words would be involved. Therefore, as these possible combinations rise the possible occurrences of /+/ would rise, I do not know by what proportion, and also would the number of rules needed to predict /+/ or /-/ using junctural or other information.

I believe I have considered all the possibilities for predicting /+/ and all of them fall short of accounting for the occurrences of /+/. (It should be noted that 3 of the characteristics of systems with juncture in Hockett's approach occur here:) The contrasts of [C+V] and [C-V] in (a, b) and the other CV minimal and sub-minimal pairs given; 2) the contrasts of $[C_1C_2-V]$ and $[C_1C_2+V]$ where C_1 occurs finally and C_2 initially. These latter contrasts, I believe are Hockett's interludes. The last characteristic of systems with juncture are ambi-syllabic and non-ambisyllabic contrasts to be discussed in succeeding sections.)

It would be much simpler to approach / +/ and syllable division from the pattern described above. That is, in any sequence of phones,

there is a high correlation between contrasts of / +/ and / -/ and C which occur finally and V initially and in C1C2 sequences where the C_1 occurs finally and the C_2 initially and the whole C_1C_2 sequence may occur only finally and medially (or only initially and medially), that in order to justify the writing of /+/ lists of minimal or sub-minimal pairs are really not necessary. Only the distributions of C and V and C1C2 as described above need be known. The involved rules and lists of pairs showing too many rules or minimal pairs to account for / +/, as was done here, would not be needed. Usually about one or two examples are given in descriptions of languages where / +/ is written. But these could be listed and / +/ therefore, just by the description, could be predicted. There should be some added convincing evidence which could be put in a description that would unequivocally settle the status of, say, /+/ directly in the description without resorting to long lists of pairs or demonstrations like the one given here, or, in the absence of this, without having to take the analysts word for the phonemic status of a unit when the only proof of what he says is only one or two examples.

Such is the possible use of the correlation of the occurrences of /+/ and the distributions of C and V and C_1C_2 mentioned above. Just on this information a phonemic /+/ would be set up as the only means of signalling syllable division medially unambiguously, without having to justify it with pairs or examples. It would be much simpler since these distributions of C and V and C_1C_2 could be gotten from a few texts. We would assume that of all the possible occurrences

individually of C_1C_2 and CV, between and in words, in the distributions described above, in the language, not only the corpus, and then all the possible co-occurrences of C_1C_2 and CV, /+//-/ distinctions would occur and /+/ could not be predicted. Also in its occurrences, as shown here, /+/ has a lexical function (in minimal pairs) and simultaneously, a grammatical function in that it is the only means to signal syllable boundaries in Havasupai.

5. To delimit sounds in Havasupai, then, contrasts of /+/ and /-/ are the primary delimiting criteria since it will be shown that phone boundaries, as I have mentioned, may be coterminous with a syllable type, and it was just shown that /+/ and /-/ contrasts are the only means to mark syllable boundaries.

It is also possible to employ the environments, juncturally defined, used to delimit phones as environments which are diagnostic for canonical shapes of phones. However, some sequences of canonical shapes (I am assuming they have been defined) are undifferentiated phonetically from one another. That is /+/ may have four allophones occurring C+lV, +3CC (non-ambisyllabic non-identical consonant cluster), C+2CC, V+5C (non-ambisyllabic short or long single consonant) and /-/ has the same allophones contrasting in the same sequences plus one more, V-6V, vowel clusters.

Now in some of occurrences of /+/, or /-/ for that matter, it is difficult to tell what allophone of /+/ has occurred, or what, in other words, canonical shapes are flanking /+/ merely by the phonetic actualizations of the allophones. For example, [+3] may have a pause of one

short vowel length and so also may [+1]. Also the sequential segmental phones do not differ phonetically when occurring with different / +/ or /-/ allophones. An example of [+1] and [+3] is: [2 sil+3 cimwici:m l] they burned it 9c p. 12; [3 0dl+lowak 1] I lived there BS p. 7. The transition from [1] to [c] and [1] to [o] are similar. It makes no difference what class of phone occurs. (The lengths of pause for [+1] and [+3] given above are relative impressions. / +/ freely varies with 1, silent pause, but beyond a certain limit, l and / +/ are clearly distinguishable from 2. I think there is no question there. This limit itself varies impressionistically but is distinguishable more times than it isn't, and since, in my analysis I would not base any general structural statements or set up any units on my ability to always make these fine distinctions in any and all of their occurrences, if / +/ and/or 1 and 2 are sometimes confused it really makes no significant difference.) Therefore since [+1] and [+3] may have the same phonetic actualizations when flanked by different canonical shapes, the canonical shapes must first be defined before any of the allophones of / +/ or / -/ may be said to occur. In delimiting and defining phones, then, only that phonetic feature common to all occurrences of / +/ and all occurrences of / -/ will be distinctive as environments for defining the canonical shapes of phones. This difference will be described now only as a contrast of ambisyllabicity / -/ and non-ambisyllabicity / +/, or where there is no such contrast, a type of transition from phone to phone which, in the case of / +/ allophones, is heard contrastively as some interruption, break or pause in the flow of speech, in the same phone environment

in which a smooth transition, /-/, occurs. In the case of /+/, the phone to its left is held, but it is not in occurrences of /-/, and the phone to /+/'s right is more fortis than one occurring to the right of /-/, in the same phone environment.

It should be noted that /+/ and /-/ cannot be defined separately, but only by comparing the two different ways of moving from one sound to another in the same phone environments. /+/ and /-/ in their occurrences are highly patterned such that for the high number of utterances in the corpus the ways of moving from one sound to another can be reduced to a low numbered (2: /+/ /-/) but highly recurrent pair for syllables. For contours, for the high number of utterances in the corpus there are also low numbered and highly recurrent features, the pitch-pause combinations and $/ \uparrow /$ and $/ \psi /$, which are higher than for syllables but still low in terms of the entire corpus. These transitional types serve as organizational units around which grammatical units such as phone, syllable and contour may be said to occur. These units then, phone, syllable, contour for the high number of utterances in the corpus are themselves low numbered and highly recurrent and thus may serve in turn as frameworks for statements concerning the distributions of segmental and supra-segmental phones.

In 5.1-6, 162 examples are given to describe the delimitation of phones and syllables which consequently leads to diagnostic frames for classing phones into canonical shapes and then to sub-classify these classes. Also, in this part, syllable types will be defined. Finally, the allophones of /+/ and /-/ are described and phonemicized here.

- in 5.5-5.7 and some other definitions of the syllable are given.
- 5.1 The following illustration delimits a syllable type and a phone:
- 1. [I wiclm+i·+clk l] they did that, they said Text II j. p. 2
- 1b. [3 ké-ttá·v 3] a long time ago SR, p. 1
- 1c. [2 kg+t, evtá·+və 1] a long time ago SR, p. 2
- 2. [l clm+i.-cclk l] they always said that Text II j, p.

The examples above establish /+/ /-/ contrasts to the right of [i·] in 1 and 2. In 1, the sequence including the first /+/ is written $[+i\cdot+c]$. In 2, the sequence after the first /+/ is written $[+i\cdot-cc]$. The /+/ and /-/ before [c] and [cc] in 1 and 2 respectively indicates two distinct and easily perceptible ways of moving from [i·] to [c]. The difference may best be described as non-ambisyllabicity in 1. contrasting in the same environment with ambisyllabicity in 2. The obvious phonetic difference in the transitions from [i·] to [c] in 1. as opposed to 2. in the same environments require that /+/ and /-/ be marked to distinguish these types of transition.

These differences may be described as a quicker glide, in 2., than in 1., from [i·] to [c] in which the audible end of [i·], in 2., is the onset of stoppage for [c] which is then released into the following sound. The onset and release of [c], in 2., is shared by the sounds to the left and right of [c] respectively, and this results in [c] heard as longer in 2. than in 1.

In 1., on the other hand, the $[i \cdot]$ does not glide up to the [c] as fast, contrastively, and there is a definite separation (this is a relative term) of the end of $[i \cdot]$ and the beginning of [c] in 1. not heard in 2.

This "separation" is the characteristic phonetic feature of non-ambisyllabicity heard when the audible end of [i·] is not the onset of [c] and the onset and release of [c] is not shared by the sounds immediately flanking [c] to its left and right.

The basis for marking /+/ in 1. and /-/ in 2., as non-ambisyllabicity versus ambisyllabicity, is not merely these two examples but by reference to a set of other occurrences of /+/ and /-/ in which similar types of transitions involving /+/ and /-/ as shown in 1. and 2. are repeated and in which /+/ and /-/ differ in the same way and /+/ and /-/ are actualized as they are in 1. and 2.

This is the case when comparing 1. with 1c, and 2. with 1b. The description of the transition from $[i \cdot]$ to [c] in 1. can also apply to the transition from [i] to [t] in 1c. Similarly, the description of the transition from $[i \cdot]$ to [c] in 2., can also apply to the transition from [i] to [t] in 1b. Contrastively, though, 2. and 1b both differ from 1. and 1c and, quite importantly, in the same way. That is, non-ambisyllabicity versus ambisyllabicity is patterned.

The following examples establish /+//-/ contrasts to the left of [i.]. (For the purposes of phone delimitation some of section 4. is repeated.)

- 3. [1 kwas vtic 1mm-a+kl 2] there is barbed wire in the back SR, p. 11.

 3a. [1 cl-m-i+clk 1] they put it in there LS, p. 4.
- 4. [3 ham-6-kkll 1] back in there SR, p. 11.
- 4a. [micl-m-i·-cclk l] you always say that J2, p. 2.

The transition from [a] and [i] to [k] and [c] respectively, written [-a+k] in J. and [-i+c] in J a are phonetically similar to those

This "separation' is the characteristic phonetic feature of non-ambisyllabicity heard when the audible end of [i] is not the onset of [c] and the onset and release of [c] is not shared by the sounds immediately flanking [c] to its left and right.

The basis for ma rking / +/ in 1. and / -/ in 2., as non-ambisyllabicity versus ambisyllabicity, is not merely these two examples but by reference to a set of other occurrences of / +/ and / -/ in which similar types of transitions involving / +/ and / -/ as shown in 1. and 2. are repeated and in which / +/ and / -/ differ in the same way and / +/ and / -/ are actualized as they are in 1. and 2.

This is the case when comparing 1. with 1c, and 2. with 1b. The description of the transition from $[i \cdot]$ to [c] in 1. can also apply to the transition from [i] to [t] in 1c. Similarly, the description of the transition from $[i \cdot]$ to [c] in 2., can also apply to the transition from [i] to [t] in 1b. Contrastively, though, 2. and 1b both differ from 1. and 1c and, quite importantly, in the same way. That is, non-ambisyllabicity versus ambisyllabicity is patterned.

The following examples establish /+/ /-/ contrasts to the left of [i·]. (For the purposes of phone delimitation some of section 4. is repeated.)

- 3. [1 kwastviíc mm-á+kl 2] there is barbed wire in the back SR, p. 11.

 3a. [1 cl-m-í·+clk 1] they put it in there LS, p. 4.
- 4. [3 ham-6-kkll l] back in there SR, p. ll.
- 4a. [micl-m-i·-celk i] you always say that J2, p. 2.

The transition from [a] and [i] to [k] and [c] respectively, written [-a+k] in J. and [-i+c] in J a. are phonetically similar to those

transitions, with regard to non-ambisyllabicity, in 1. and 1c. Similarly, the same transitions described as ambisyllabicity in 2. and lb. are heard in the transitions from [a] and [i.] to [k] and [c] respectively in 4. and 4a. and written [-á-kk] and [-í·-cc], respectively. Therefore the junctural environments to the right of [i] and [d] in 3a. and 3. are similar to the junctural environments to the right of $[i\cdot]$ in 1. and $[\not q]$ in lc. All occur before / +/. (Since [a] doesn't occur here with / +/ /-/ contrasts to the right and left, it will not be delimited. It is therefore written here to simplify illustration as are all the other phones not delimited here.) Both $[i \cdot]$ and [d] and [d] occur before non-ambisyllabic sounds here. Similarly, the environments to the right of [:] [4] and [6] in 2, lb and 4a respectively are the same. They both occur before ambi-syllabic sounds marked /-/; and all these occurrences differ in the same way from the environments to the right of [i.], [j], and [a] in 3a, 1., 1c, and 3 respectively. Both [a] and [i], then may occur before / +/ and / -/ to their right. Now to the left of [d] in 3 and 4 and to the left of [\tilde{i} •] in \tilde{j} a and \tilde{j} 4 a \tilde{j} 4 appears, but to the left of [i.] in 1. and 2. a / +/ appears. Therefore, while both [d] and [i.] may occur with /+/ and /-/ to their right, only [i-] may occur with /+/ and /-/ also to its left. [a] only occurs with /-/ to its left in these examples.

In the transition to the left of [a] in a, and a, and [a], in a and a, as contrasted with the transition to the left of [a] in 1, and 2, there is no actual pause or interruption of the flow of speech, but a smooth transition from [a] to [a] in a, and a, and

transitions, with regard to non-ambisyllabicity, in 1. and 1c. Similarly, the same transitions described as ambisyllabicity in 2. and lb. are heard in the transitions from [a] and [i] to [k] and [c] respectively in 4. and 4a. and written [-á-kk] and [-í-cc], respectively. Therefore the junctural environments to the right of [i] and [d] in 3a. and 3. are similar to the junctural environments to the right of [i·] in 1. and $[\not e]$ in lc. All occur before / +/. (Since [a] doesn't occur here with / +/ /-/ contrasts to the right and left, it will not be delimited. It is therefore written here to simplify illustration as are all the other phones not delimited here.) Both [i] and [d] and [d] occur before non-ambisyllabic sounds here. Similarly, the environments to the right of [i.] [ϕ] and [ϕ] in 2, lb and 4a respectively are the same. They both occur before ambi-syllabic sounds marked /-/; and all these occurrences differ in the same way from the environments to the right of $[i\cdot]$, $[\not g]$, and [6] in 3a, 1., 1c, and 3 respectively. Both [6] and [$i \cdot$], then, may occur before /+/ and /-/ to their right. Now to the left of [6] in] and 4 and to the left of [i·] in 3 a and 4a a /-/ appears, but to the left of $[i\cdot]$ in 1. and 2. a /+/ appears. Therefore, while both [d] and $[i\cdot]$ may occur with / +/ and / -/ to their right, only [i.] may occur with / +/ and /-/ also to its left. [a] only occurs with /-/ to its left in these examples.

In the transition to the left of [a] in \mathfrak{J} , and 4. and [i], in \mathfrak{J} a and 4a., as contrasted with the transition to the left of [i] in 1. and 2., there is no actual pause or interruption of the flow of speech, but a smooth transition from [m] to [a] in \mathfrak{J} , and 4. and [m] to [i] in \mathfrak{J} a, and

4a. and so a /-/ is written to the left of [a] and $[i\cdot]$ in these examples. But in the transition to the left of $[i\cdot]$ in 1. and 2., as contrasted with the transition to the left of $[i\cdot]$ in Ja. and 4a. and [a] in J. and 4., there is a break or interruption of the flow of speech and in these examples a /+/ is written. (These environments are all minimal—/+/ and /-/ both occur to the right of [a] and $[i\cdot]$ when /+/ or /-/ occur to their left.)

Now the different transitions, [-m+i+1] 1., [-m+i+1] 2., and [-m-i·+] Ja., [-m-i·-] ka., are minimally contrastive to the left and right of [i•] and should be marked, with /+/ or as /-/. Moreover, the contrastive occurrences of /+/ and /-/ here mark not only distinctive transitional modes, but the different patterns in which phones may organize themselves. The occurrences of /+/ to the left of [i•] in 1. and 2. contrasted with the occurrence of /-/ to the left of [i•] in a. and 4a, separates [m] from [i] in 1. and 2. but [mi] in Ja. 4a. is heard as one unit. Similarly, the contrast of /+/ and /-/ to the right of [i] and [d] "separates" [c] from [i] when /+/ occurs and when /-/ occurs [i-c] is then heard as a unit. The same may be said for [a] and [k]. These different patterns of co-occurrence (or ways of organizing themselves) of segmental phones, described by the contrastive occurrences of / +/ and / -/, are best described as different syllable types. The syllable types here then are, if I may assume canonical shapes again, [=m-i+] C-V+ versus [-m+i+] +V+ versus [-m-i-c] CV-C versus [-m+i·-c] +V-C.

If we accept these syllable types as delimited, then the phone [i.] is delimited as a syllable type having one phone as a constituent.

(There is no way of proving here that [+i·+] is only one phone.) If [+i.+] is accepted as a delimited syllable type having one phone, all single sounds which may occur in the same environment, [+·i·+], as [i.], are also delimited and will belong to the same class. This class will not be marked as yet but in anticipation of it, the /+/ to the left of [i·] will hereafter be marked as [+1] and the /-/ to the left of [i·] as [-1]. (The numerals have no phonetic value. It is only /+//-/ contrasts that are significant.) Non-ambisyllabic and ambisyllabic contrasts are marked as [+5] and [-4] respectively. These are the only numerals occurring with / +/ or / -/ that have phonetic value. The diagnostic environment, then for all phones which may substitute for [i.] and thereby may be delimited and classed with [i.] is: [+1__+5~-4] Frame I. Finally, it should be noted that if a phone was not coterminous with any other phonological unit, e.g. syllable, such that both could be delimited by verifiable contrasts of / +/ and / -/ as shown here, there would actually be no formal basis whatsoever as described here for delimiting phones and the refore no basis for talking about or even referring to phonemes.

- 5.1.1 Other sounds may occur in frame I and all those that do will be delimited and described below. For these examples there are a minimum of 2 examples given to show contrasts of [+1___-4] and [+1___+5] for one phone:
- 6. [2 nyuwiclm+lə-4pa:c¢v 2] when the Indians did that HS. p. 4
 [1 əhweakom+lə+5panyə wei;m 3] she had the two of us LS, p. 16;
- 7. [1 tlny-ut+l-u+5clnyə 1] before they went to school BS, p. l
 [2 nyût+lú-4cə smá:cə gavyúc¢v 1] I've never been to a school
 where you sleep DW Text I, p. 14.

- [3 hma:nya nyul+lu:clk 3] the children that go to school BS, p. 29;
- 8. [1 kdk+l5+513nc 1] no horses SR, p. 14.
 [1 nvlvalwi: am+l5-413nya 2] my horses SR, p. 15.
 - [1 vak+lowav 2] we lived here SR, p. 4;
- 9. [1 pcm+1 26.+5clm] we gave all SR, p. 14

 [1 wasi:vlk+la6.-4vlk l] I think I hear it SR, p. 14;
- 10. [2 hamyúin+ll+5mɔnyum 2] you did something there Buff, p. 20 [1 gavyúk+ll-4mɔyyuk 3] something happened Buff, p. 19;
- 11. [3 kwés spoclm+li+5qwál 2] I wish we knew something BS, pp. 8-9
 [3 nyuwik+li-4squcyók 2] when they do that they get small (pieces of)
 wood 5C, p. 1;
- 12. [1 Îm+licə kic lm+li-4viyu 3] they said it, I heard it, BS, p. 19. [1 tunya:cəh+ldlma:tlm+li+5vlc 1] (Havasupai expression of incredulity.) Literally, they think it happens, BS, p. 7;
- 13. [2 hdm+ld+5pəm 3] they got up there BS, p. 2

 [1 kiyú: lnydc+ld-4kɔ l] they came from the east PW, p. 7

 [1 yúyît+ld-4kwé:wd: l] DW Text I, pp. 7-8.
 - [1 tutav+15:v+10+5ciclk 2] I never used to get tired LS, p. 15.

In these examples, a [+] [-] contrast to the left, involving the same phones, has not been given. However, [+5] and [-4] contrasts do occur to the immediate right of these same phones. The [+1] [-1] contrasts to the left are not necessary since frame I has already been set up by $[+|\tilde{i}\cdot+5\sim-4]$. Therefore, all phones substituting for $[\tilde{i}\cdot]$ in that slot also occur in frame I. The boundaries of $[\tilde{i}\cdot]$ were marked by [+] [-] contrasts to its left. The beginning of $[\tilde{i}\cdot]$, then, is known by

reference to this contrast and can be marked by either [+1] or [-1] in frame I since the contrasts delimit it. (I mark it [+1] arbitrarily because it is more indicative of a beginning as a pause of some sort.) The end of [i], similarly, is known by reference to the [+5] [-4] contrasts to its right in frame I. (Both [+5] and [-4] are a part of frame I because their contrasts are particularly diagnostic for phones occurring in frame I. This is not as true for [+1] [-1] contrasts.) Therefore, the reference point for the beginning of all sounds substituting for [i] in frame I is at that point indicated by the [+l] [-l] contrasts to the left of [i] in 1., 2., 3., Ja and occurring after [+1] in frame I, and the end of all those sounds substituting for [1.] before [+5] and [-4] is at that point marked by the [+5] [-4] contrasts in 6 - 13 or by [i.] in frame I. (These "points" are arbitrary, i.e., not too finely made.)2 In example 13, three different sounds appear after the sounds after [+1]. That these be the same, in 13 or in 6 - 13, as they were for [i·] in 1., 2., 3a., 4a., is unnecessary now. The important feature of frame I is that one particular sound may occur before [+5] [-4] contrasts to its immediate right. This is all that frame I requires. However, it should be noted that no sound occurring before just [-4] or [+5] in 6 - 13 will be used in further illustrations because it cannot be said to have occurred in frame I.

²I am not sure that [+5] [-4] contrasts to the right are really not necessary in 5 - 13. It does not seem to follow that the ends of sounds after [+] could be marked merely by reference to the end of [i·] in frame I since there is actually no silent pause in these contrasts to the right. In any case [+5] and [-4] would appear in frame I even if the contrast wasn't used to delimit sounds in 6 - 13, but also because it is an essential diagnostic feature of frame I.

5.1.2 The sounds which occurred after [+5] [-4] contrasts in 6 - 13 can occur after [#] and in this same sequence immediately before the sounds occurring after [+1], including [1.]: (For reasons of descriptive simplicity, all pauses of 2,3 will be referred to as [#], and all of 1 and [+1 -+3] as [+] with no numeral. In section 5 no distinction is made between [#] and [+], for purposes of delimitation and classing of phones. The important contrast is any silent pause, [+] or [#], contrasting with [-], no silent pause of any sort. However, this does not mean [#] is everywhere substitutable for [+1 -+3] and vice-versa. It means that if some phones occur after [+] and some others after [#], these are treated in 5. As the same environments, i.e., all phones occur after silence of one degree of length or another, and that is the important distributional feature in 5.)

14. [#c-1i·cɛ 3] mother JII, p. 4; 15. [# c-lɔ́qi 3] motion of mixing,

9C, p. 9; 16. [#1-lɔ́q 1] he pulled it out, DWII, p. 2; 17. [m-ləti:klnyə 2]

beans Jl, p. 1; 18. [p-lít; əkuvá:vlm+liclk 2] they only ask for money

BS, pp. 19-20.

Now all sounds which occurred after [+1] and before [+5] and [-4] contrasts in 6 - 13 are occurring in 14 - 18 here after [-1], although not with both [+5] and [-4] contrasts to their right. However, the ends of all sounds occurring in 6 - 13 before [+5] and [-4] contrasts are marked by that contrast, therefore another contrast in 14 - 18 is not necessary. These sounds, then, occurring after [+1] in 6 - 13 and [-1] in 14 - 18, and before contrasts of [+5] [-4] in 6 - 13, therefore, are occurring in frame I and their beginnings and ends are marked by the contrasts

diagnostic for that frame. (6 - 13 here and in this section refers to only those examples where there were both [+5] and [-4] contrasts to the right.) All sounds occurring in frame I are now delimited and defined as A. This class also includes [6] in 3a., 4a., where it occurred before [+5] [-4] contrasts and in 13. after [+1]. The sound occurring after [6] in 3a. 4a., and after [+5] [-4] contrasts there, may occur after [4] before [6]: 19. [#kávayúclv 1] some of them PW, p. 5.

Since A has been delimited, its beginnings and ends known, the end of all sounds preceding A in 14 - 19 is marked at that point where A begins, which in turn was marked by [+1] to their right, and the beginning of all sounds preceding A in 14 - 18 is marked either by the [+5] [-4] contrasts to the right of A in 6 - 13, which marks the end of A and therefore the beginning of the following sound, or by silent pause [#] to their left in 14 - 19. These sounds in 14 - 19, occurring before A and after [+5] and [-4] in 6 - 13 and after [#] in 14 - 19 are delimited and marked as B. These are [m, p, 1, c, k].

Why A and B are definitely two sets of classes and why the types of transitions in defining their diagnostic frames must be written, will now be described.

The contrasts of [+5] and [-4] occurring after A in frame I do not occur after B in 14 - 19. In fact, in the whole corpus, B, which may occur after [+5] and [-4] contrasts in frame I, never occurs before this same variation of [+5] [-4] when preceded by [#] or [+] in the same sequence, as A does in frame I, even when B is not followed by A. That is, B never occurs in sequences where a silent pause of

[+] or [#] may occur to their immediate left and where the same type of [+5] [-4] contrasts, described as non-ambisyllabic versus ambisyllabic, may, in the same sequence, occur to their immediate right as such a sequence may flank A in frame I. There are sequences of [#~ \pm i· \pm 5~-4], say, but there are no sequences of, say, *[#~ \pm m \pm 5~-4] in the entire corpus. In clusters of B₁B₂, (B only refers to those sounds delimited in 14 - 19) a type of ambisyllabic transition, heard when A sounds move to B sounds, may precede B sounds. But only [-4], ambi-syllabicity, is possible to the left of B₁ here when it is in combination with other B₂ sounds. A [-4] [\pm 5] contrast to the left of B sounds in combination does not occur: *[...A-4~ \pm 5B₁B₂] does not occur.

Furthermore, no [+5] [-4] variations are possible to the right of the sequences of B sounds: $*[A-4B_1B_2+5-4]$. Nor do these variations occur to the right of the first B: *[A-4B+5-4B]. Nor is any combination of these three non-occurrent sequences possible. For example: 20. [1 nylhám+li·-1+k-icitáva l] SR, p. 7 worm-in-the-mouth was there. ([i·] was delimited in frame I, and [1,k] in 14-19.) After [i·] here, in sequence with B_1B_2 , only one type of transition is possible—described as ambisyllabic and marked as [-4]. No contrast of [-4] [+5] to the right of [i·], or any other A, in sequence with [1, k] or any B_1B_2 has been recorded. After [1], there is a transitional effect marked as [+]. This [+] always occurs with [-4] in the same environment in sequences of B_1B_2 and may not be contrasted with any /-/ in these same sequences. That is, *[A-4B_1+-B_2] does not occur. In all examples of A in sequence with single B_1 in 14 - 19, a close transition [-] occurs

after single B_1 and also after [lk] in 20 as [+lA-4~+5B-] (14 - 19) and [+A-4B+B-] (20). Now in sequences of B₁B₂ or B, [+1] [-1] contrasts are possible to their right, but when [+1] occurs to the right of B1B2 or B, only [-4] can occur to the left of single B and only a [-] between B₁B₂ in the same environment where [+] occurred at the time [-] occurred to the right of B₁B₂. That is, 2la. [A-4B+B-], 2lb [A-4B-B+], 21c. [+1A-4~+5B-] 21d. [-4A-4B+1] only are possible. Initially, B and B_1B_2 always occur as: 21e. $[\# \sim +B_1-\pm B_2-A]$. In other words, although we have seen A occurring between sequences of [+], [+1A+5] in frame I, no B sound in any environment ever occurs between any sequences of [+]. *[A-4B+B+], *[+lA+5B+B] *[+lA+5B+l] all are non-occurrent sequences. An example of [-4B+B-] [-4B-B+l] is: [1 nyuwæ·1-k+lú·k+lilinyə 1] they dig around and see worms DW T2, p.6. Compare with 20 on page 4. An example of [+5B-]-[-4B+1] is: 22. [3 kwel-4m+liclk 2] he said something J.3, p. 2. Now [m] occurs as B in 14 - 19 and occurs after [-4] [+5] contrasts in 10. after the same [] it occurs after here. (Also here [] occurs after [+1]. here is of the same quality as [[in 1., 2. etc. Therefore, whether it is long or short, it is still delimited as the same A.) However, when [m] occurred after [+5] in 6 - 13 only [-] after [m] and here, when [+1] occurs after [m], only [-4] can occur before it. There is a constant shift of these [-]'s and [+]'s in order to prevent the ungrammatical sequence of [+5] (or any [+] or例) and [+1] (or any [+] or例) occurring simultaneously with [m] or any single B or sequence of B1B2, as *[+4-B+-4] or *[-+B₁B₂+-4]. Therefore *[+4-B+5-4] or *[+4-BB+5-4] is also not possible. Only when playing with language are these sequences, marked as non-occurrent here, conceivable. But in my corpus of connected speech in narrative style these sequences did not occur. It is apparent that B which may occur after [+5] and [-4] in frame I, in all their other occurrences, in combination or alone, can only occur in sequences in which at least one juncture must be [-], smooth transition, and in sequences in which there may be any variations of [+] or [-] to their right or left where the other juncture, [+], where the juncture to their right is [-] or [-] where the juncture to their right is [+], and [+] is kept constant (see 21a-e). However A may occur in environments, notably frame I, in which at least two junctures may be [+] and none may be[-], and [+] [-], [+5] [-4], contrasts may occur to its right in the same sequence in which the other juncture, [+] or [-], may be kept constant. Therefore, for example, in permissable sequences of 24a. [+~#A+5~-4B-], 24b. [-~#B-1A], 24c. [-4B+B-1], 24d. [-4B-B+~#], No B occurs as A in 24a and hence cannot substitute for A in 24a. frame I: it would be clearly ungrammatical. That the reverse is also not possible will now be illustrated. Sequences of phones in class A may occur after [+] or [#]:

5.1.3. Sequences of phones in class A may occur after [+] or [#] 25. [+1icim 3] they said that SR, P. 16. 26 [# uəθəm 1] let me see it BUFF. p. 13. [1, ú, ə] were delimited and classed as A in frame I in examples 11, 7, 8 respectively, and therefore

their boundaries are known when occurring in sequence. (In the following discussion everything said of 25 applies to 26.

The transition from i to i, A to A, in 25 is phonetically similar to the transitions described for B to A in 14 - 19. That is, [+A-A] and [#B-A] both occur. (There might be some varying phonetic differences but they are too fine to be signi-The restrictions of occurrences described for BA with certain other juncture sequences also applies to sequences of AA. That is, like *[+~#B+A], *[+~#A+A] doesn't occur. Also like BA no contrast of [+5] [-4] is possible in AA as *[+ $^{4}A+5^{-}-4A$] or any [+] [-] contrast in this environment. Only [#~+A-A] is possible, like BA. Therefore B could substitute for $A_{\underline{1}}$ in the sequence $[+7A_1-A_2]$ (see 14 and 25 where [c] in 14 occurs in exactly the same slot as [i] in 25.) This indicates that, at least with regard to $[+^{+}A_{1}-A_{2}]$ and $[+^{+}B-A_{2}]$, B and A_{1} could be classed together since they may minimally mutually substitute for each other here without any change occurring in the total environment. But if A_1 were of the same class as B, it could substitute for B in frame I after [+5] [-4]. However as I have said above *[+~#A1+5-4A1] does not occur. Only [+ FA1+5-4B] occurs. Also I have noted that B cannot substitute for any A in frame I. Therefore, because B and A_1 are minimally mutually substitutable in [+-#B-A] and [+-# A_1 -A2], directly after silent pause, and both A and B cannot occur in *[+~;_+5~-4], we could bring them together in a single class;

their boundaries are known when occurring in sequence. (In the following discussion everything said of 25 applies to 26.

The transition from i to i, A to A, in 25 is phonetically similar to the transitions described for B to A in 14 - 19. That is, [+A-A] and [#B-A] both occur. (There might be some varying phonetic differences but they are too fine to be signi-The restrictions of occurrences described for BA with certain other juncture sequences also applies to sequences of AA. That is, like *[+~#B+A], *[+~#A+A] doesn't occur. Also like BA no contrast of [+5] [-4] is possible in AA as $*[+^*4A+5^*-4A]$ or any [+] [-] contrast in this environment. Only [#~+A-A] is possible, like BA. Therefore B could substitute for $A_{\underline{1}}$ in the sequence $[+7A_1-A_2]$ (see 14 and 25 where [c] in 14 occurs in exactly the same slot as [i] in 25.) This indicates that, at least with regard to $[+^*A_1-A_2]$ and $[+^*B-A_2]$, B and A_1 could be classed together since they may minimally mutually substitute for each other here without any change occurring in the total environment. But if A_{1} were of the same class as B, it could substitute for B in frame I after [+5] [-4]. However as I have said above $*[+^4A_1+5-4A_1]$ does not occur. Only [+ FA1+5-4B] occurs. Also I have noted that B cannot substitute for any A in frame I. Therefore, because B and A_1 are minimally mutually substitutable in [+~#B-A] and [+~# A_1 -A2], directly after silent pause, and both A and B cannot occur in *[+~ \sharp _+5~-4], we could bring them together in a single class;

but since, in frame I, Bs cannot substitute for As nor As for Bs it would be necessary to separate them again by frame Now it is not merely the slot that is significant in frame I-[#AB] is obviously equivalent to [#BA]. But it is the maximal possible kinds of transitions in sequences of [#AB] as against [#BA], which are the "slot", and which require that B and A be separated. The fact that only certain numbers and types of transitions are possible, or grammatical, depending on the sequence involved, AB or BA etc., requires that B and A be separated into two separate classes and that the different classes and types of transitions be marked because neither is predictable from the other or any other I am calling frame I diagnostic for A. Therefore all other environments where A and B are mutually substitutable are not definitive of A class. In [#"+A+5"-4B], the occurrence of either [+5] or [-4] is unpredictable from the marking of A or B, and [+5] and [-4] is grammatically phonemic, as we have seen in 4., since their contrasts result in different syllable types.

In initial position, no class, A or B, can be predicted without at least marking one juncture. That is, in [#--B-A] and [#--A-A], the first B and A and the [-] is predictable here. This is true of non-occurrent sequences involving B on pages 45 ff. However, in medial position [-B+A] and [-A+A] may occur (see vowel clusters for example of [-A+A]).

So may [-B+~-A], [-B-~+B], o, p, 3e, and [-A+5~-4B]. Therefore, both classes and junctures must be written.

5.1.4 I will now continue classing the phones.

All sounds occurring in [+~#_+5~-4], frame 1, are now All sounds which may occurr in $[+^*\#V+5^*-4_]$, frame 11, are now C. The following sounds have been so far defined and delimited in C and V respectively: 1, m, p, c, q, v, k; these are C_1 . 1, 1, 5, (, \hat{a} , \hat{a} , \hat{a} , \hat{a} , \hat{u} , $\hat{\epsilon}$; these are V_1 . No C_1 may substitute for V_1 in frame 1 and no V_1 may substitute for C1 in frame 11. I might add that there is no circularity here. C and V have both been defined and delimited by reference to juncture features which are independent of the definitions of C and V in isolation. The "map" of the co-occurrences of C and V, in Havasupai, with respect to these juncture features, simply requires the marking of two different classes of phones and junctures, for the reasons mentioned in 5.1.3. Diagnostic juncture slots were needed in order to separate and identify at least some C and V, in order to identify other slots when C_1 or V_1 occurred with sounds not yet classed. In the following sections other sounds will be classed.

5.1.5 The maximum number of V₁ which may occur in sequence after [+], or [#], is three. Only two actually occur in the corpus, see 25 and 26 for examples, but [ə] may freely occur as a

transitional vowel in any position in connected speech and so to provide for this, the maximum number of V_1 initially will be three. Furthermore [a] may vary with [1], [a] as a third member in a three V1 sequence. Therefore the maximum number of V1 occurring initially is three excluding non-syllabic [u] and [i], written now as [w] and [y], and three V_1 can occur only initially when [ə], $[\hat{1}]$ or $[\hat{a}]$ is the third member. These three V_1 , $[\hat{1}, a, \hat{a}]$ will then be classed as V_1 a and all other V_1 are V_1 b. Medially in sequences of [-], V₁ may occur in clusters of from two to four, excluding non-syllabic [u] and [i]. Medially, two is most freq-3-4 clusters occur medially mostly as morphophonemic free variants in connected speech and do not occur at all in citation. Vla do not occur as transitional vowels after a four vowel sequence medially. They do, though, occur after a three vowel sequence (see 34). Examples of medial V₁ in sequence are: 28. [1 temp 3] negative particle BS, p. 15; 29. [3 classes 3] they put it in J13, p.5; 30. [1 ?16vəhək 2] I think so BS, p. 22; 31. [1 puladavyú·cım+licik 1] Jl3, p. 2; 32, [3 kaiaimo: 2] sometime around there IS, p. 11; 33. [2 qe:cimhaykúkwá0i kůlať: vicík 3] they understood English a little BS, p. 33; 34. [# Oapítiajetaspcok 3] they said not to laugh aloud 8C, p. 10.

In a sequence of three sounds, occurring initially after [+] or [#], 28 - 30, if the last two have been defined and delimited as V_1b in frame I, and the last of the three sounds is not V_1a , also defined and delimited by frame I, but some other sound, the first sound in this initial sequence of three must belong to some

other class not V_1 , since three V_1 in sequence does not occur initially. Similarly, in a sequence of four or five sounds after [+] or [#], 31, 32, where the last three or four are V1 and the last may or may not be Vla, the first must also belong to some other class not V1, since a maximum of only three V, V1a and V1b, are possible initially. Also, in any medial sequence of five sounds where the last four are V_1 and the last sound in this five sound sequence may or may not be $V_1^{}a$, the first must again belong to a class not V1, since only four V, V1a and V1b, are possible medially. This first sound in this five sound medial sequence when occurring between sounds delimited as V1 is thereby delimited. If this first sound in this five sound sequence did not occur between sounds already delimited it could not be delimited and classed. In a three to four sound medial sequence where the last two to three are V_1 , $\pm V_1$ a, the first sound, at least, if it hasn't already been classed as Cl or Vl is ambiguous since we have seen sequences of four V1 can occur medially. But when sounds occur initially and the last three are V1b, ± V1a, the first cannot be a V_1 since sequences of four V_1 do not occur initially. Therefore all sounds occurring initially before two V_1 (where the last V_1 is not V_1a), three V_1 , $\pm V_1a$, four V_1 , $\pm V_1a$, and all occurring medially as the first sound before four V_1 are defined and delimited as C_2 in the following frames (C_2 is just a notational symbol at this point. It could just as well be ${\rm V}_2$ since the environment only mentions no V1. Frame 111 is characterized by occurrence before clusters of V1 and not also the number of V_1 . This would be cutting it too fine.) : $\#^{-}C_2V_1V_1$ not V_1a ,

frame IIa; [#~-C2V1V1V1+V1b~V1a..], frame IIb; [-C2V1V1V1V1a~V1b..], frame IIIc; Some other occurrences of C2 are: 35.

[1 yúa+irm 2] I wanted it, I said BS, p. 37, (IIIb);

36. [1 səamcım 3] they closed it BS, p. 5. (IIIa); 37.

[3 hak+0is1 3] Cameron (salt-water) BUF., p. 28, (IIIa);

38. [1 vəúl.v 3] they rode PW, p. 1, (IIIa).

 C_1 is then composed of: p, c, v, q, l, m, k; C_2 of: p, c, t, t, k, v, θ , s, y, ?; C3 of those that occur as C1 and C_2 : p, c, v, k. C_3 may occur in frames II and III, C_2 only in frame III and C1 only in frame II. However, none of C_3 , C_2 , C_1 occur in frame I. $\forall l$ occurs in frame I but may not substitute for any C in frames II and III a-c. 5.1.6 Of the Cs defined and delimited in frames II and IIIa-c, only the sequence s-k-y may occur initially after [+]. 39. [1 skyáe·lc.k 3] they irrigated it DWI, p. 12; [#~+s-k-1..] occurs in citation but only [+**k-1..] occurs in connected speech: [1 klápcím 1] they flatten it 70, p. 8, ([sklápkə] in citation.) In connected speech [kl] ~[sakl]: [2 nyùk seklapink nyuciki cimi cik 3] lay them in there forked 50, p.7.) There are other sequences of three sounds after [+] or [#] of which two may be c_1 and the other is v_1 or some sound not yet classified. Examples of this latter case are: 40. [3 snyuk 1] again 7C, p. 4; 41. [3 hmtanya nyuwicigwatu? 2] They do that with squash also 7C, p. 11. Now between [s-y]

here, in 39., [k] C3, and, in 40., [n], nowdelimited by being flanked by delimited [s] and [y], occur in the same slots. Vl may also occur here: [l sayvmyúc k 2] it's best SR, p. 10a. (I am only considering slots now. I only needed juncturally defined environments to begin with. It is much simpler to work just with slots, when it can be done, and at this point it can.) In 41., [h], delimited when occurring after silence and after a delimited [m] (C_1) , occurs. Now [n] and [h] cannot occur in any of frames I-IIIa-c. We have seen that C and V can occur in [s-y], 39. and 40., therefore the status of [n] there is doubtful. However no C or V can occur in the slot occupied by [h] in 41, but since [h] cannot occur in frames I-IIIa-c its status is also doubtful. Therefore the slot [+ + s-y] is useless and for different reasons so is #~+xmt]. Initially, in texts, as I have mentioned, only [+#sky..] occurs. No V_1 or any other C_{1-3} occurs in the [y] slot. Therefore the slot \slashed{x}^{-+} sk $extbf{x}$] is also useless. But since sequences of three C_{1-3} only may occur initially when the first and third C_{1-3} are [+*#s-y], and this may also be a V_1 slot and a slot filled by unclassified sounds, in any other combination of C_{1-3} , then, as $[+^*\#C_{1-3}\underline{x}^C_{1-3}]$, the second slot cannot be a C_{1-3} slot. It can only be a slot for sounds not C_{1-3} . This is frame Ia: $[+^*\#C_{1-3} \pmod{[s]} \times C_{1-3} \pmod{[y]}]$. All sounds occurring here are V_2 . No C_{1-3} or [n] may occur here,

although many V_1 may. Frame Ia could not be used as frame I because of the number of V_1 and C_{1-3} clusters which may occur initially. Some reference point, such as frame I and II, had to be set up first, juncturally. Also, we have seen that CC, CV, VV sequences occur initially which could not even be distinguished juncturally.

Sounds occurring in frame Ia and thereby defined and delimited as V_2 are: $42 \cdot \underline{\acute{e}} \ [3 \ q\acute{e}ctem \ v\'{i}mw\'{e}mny\'{i}m+d\acute{a} \cdot v_{i}m \ 2]$ when it gets a little warm DWI, p. 11; $43 \cdot \underline{\acute{o}} \ [3 \ c\acute{o}q\dot{a}c$ hanákâmyóm 2] get the one with the cedar-berry necklace Buff, p. 4; $44 \cdot \underline{\acute{a}}(V_1)$ [1 páke távim 1] he came out Buff, p. 6; $45 \cdot \underline{\acute{u}} \cdot (V_1)$ [2 luiki 1] I ran away L.S., p. 11; $46 \cdot \underline{\acute{a}} \ [1 \ v\acute{e}lewi)$ tes:p 3] no more like that L.S., p. 15; $47 \cdot \underline{\acute{a}}(V_1)$ [1 vivicial 2] we came here L.S., p. 6; $48 \cdot \underline{\acute{e}}(V_1)$ [1 vivim] but L.S., p. 10; $49 \cdot \underline{\acute{e}} \ [2 \ k\acute{e}te$ pâtá:y 3] the old people S.R., p. 3; 50. $\underline{\acute{o}}$ [1 colapanc+táyâc 2] cola s dead father JI, p. 5; 51. $\underline{\acute{e}}$ [3 citácin 2] father B.S., p. 6; 52. $\underline{\acute{e}} \cdot [1 \ a\acute{e} \cdot v_{i}l \ 1]$ it gets dirty 9C, p. 14.

Sounds occurring in frame Ia include those occurring in frame I, [á, ì, ú:, í] V_1 , but not in frames II, IIIa-c. Other sounds occurring in frame Ia are [ì, 4, ó, é, é]. These latter sounds do not occur in frame I, II, IIIa-c. I am not giving the examples here, see IPS section, but it is a fact that all the V_1 which occur in frame I stressed and unstressed occur here in frame Ia. It is evident that in a language

although many V_1 may. Frame Ia could not be used as frame I because of the number of V_1 and C_{1-3} clusters which may occur initially. Some reference point, such as frame I and II, had to be set up first, juncturally. Also, we have seen that CC, CV, VV sequences occur initially which could not even be distinguished juncturally.

Sounds occurring in frame Ia and thereby defined and delimited as V_2 are: $42 \cdot \underline{\acute{e}}$ [3 $\overset{\checkmark}{\text{o}\acute{e}}$ ctəm $\overset{\checkmark}{\text{vimwémnyim+d\acute{a}\cdot vim 2}}$] when it gets a little warm DWI, p. ll; $43 \cdot \overset{\checkmark}{\text{o}}$ [3 $\overset{\checkmark}{\text{co\acute{e}}}$ dác hanákânyóm 2] get the one with the cedar-berry necklace Buff, p. 4; $44 \cdot \overset{\checkmark}{\text{a}}(V_1)$ [1 $\overset{\checkmark}{\text{páke}}$ távim 1] he came out Buff, p. 6; $45 \cdot \overset{\checkmark}{\text{u}}$: (V_1) [2 $\overset{\checkmark}{\text{lu}}$:ki 1] I ran away L.S., p. ll; $46 \cdot \overset{\checkmark}{\text{a}}$ [1 $\overset{\checkmark}{\text{válewi}}$ teɔ:p 3] no more like that L.S., p. 15; $47 \cdot \overset{\checkmark}{\text{l}}(V_1)$ [1 $\overset{\checkmark}{\text{vlyu}}$:cik 2] we came here L.S., p. 6; $48 \cdot \overset{\checkmark}{\text{l}}(V_1)$ [1 $\overset{\checkmark}{\text{vleim}}$] but L.S., p. 10; $49 \cdot \overset{\checkmark}{\text{l}}$ [2 $\overset{\checkmark}{\text{két}}$ pâtá:y 3] the old people S.R., p. 3; $50 \cdot \overset{\checkmark}{\text{o}}$ [1 $\overset{\checkmark}{\text{colapanc+táyac}}$ 2] cola's dead father JI, p. 5; $51 \cdot \overset{\checkmark}{\text{l}}$ [3 $\overset{\checkmark}{\text{cltácin}}$ 2] father B.S., p. 6; $52 \cdot \overset{\checkmark}{\text{e}} \cdot [1 \overset{\checkmark}{\text{colapanc+táyac}}$ 1] it gets dirty 9C, p. 14.

Sounds occurring in frame Ia include those occurring in frame I, [á, ì, ú:, í] V_1 , but not in frames II, IIIa-c. Other sounds occurring in frame Ia are [ì, 4, ó, é, é]. These latter sounds do not occur in frame I, II, IIIa-c. I am not giving the examples here, see IPS section , but it is a fact that all the V_1 which occur in frame I stressed and unstressed occur here in frame Ia. It is evident that in a language

like Havasupai this type of frame has a low redundancy for sounds not C₁₋₃. Since no C₁₋₃ occur here in frame Ia and since all the V₁ occurring in frame I do occur in frame Ia, all sounds not occurring in frame I, II, IIIa-c, but in frame Ia have more in common with V₁ than with C₁₋₃. Hence this is a definite V frame and all sounds occurring in frame Ia but not I, II, IIIa-c are V2 and all occurring in frame I, Ia and not in II, IIIa-c are V_l . Frame Ia is not a diagnostic slot for V, although all occur there because V, were first separated from C1-3 by frame I, and this frame I is the diagnostic slot. But since all V_1 occur in frame Ia too, and no C_{1-3} occur there, this is a diagnostic frame, but in another sense. All V occurring in frame Ia are V_2 . All occurring only in frame I are V_1 and only in frame II, V_2 . 5.1.7 It was noted in frame II that the only three vowel (V1) clusters occurring initially after [+] or [#] were those in which the last V1 was Vla. We may add $[\hat{l}]$ (V_2) to this class. It varies with $[\hat{l}]$ as the third member in initial V clusters. ([1] was not mentioned in frame II. It had the same status there, though, as had [h] and [n] with respect to frame Ia. Since it was unclassifiable at that time, i.e., did not occur in frames I, II, IIIa-c, I gave sequences in which

We may now mark V_1 as V_3 in three V_3 sequences after [+] or [#] and say in the sequence, then, $[+\#V_3 \times V_3 \pmod{V_1a}]$, frame IIId, the medial slot can only be filled by a non- V_3 . For the same reasons, frames IIIa-c were set up. Also, in the sequence $[+\#V_3 \times V_3 \pmod{V_1a}\times V_3 \pmod{V_1a}\times V_3 \pmod{V_1a}\times V_3$ frame IIIe, the third slot can only be filled by a non- V_3 . For the same

it did not occur, as I did with [h] and [n].)

reasons frames IIIa-c were set up. Sounds occurring in frames IIId, e, cannot occur in frames I, Ia, nor in frames II, IIIa-c. But sounds occurring in frames II or IIIa-c, and not in frames I, Ia, occur in frames IIId, e, so frames IIId, e are definite C_{1-3} slots, not V_3 slots. Therefore, those sounds only occurring in frames IIId, e share occurrence features more C_{1-3} than V_3 and therefore are linked to C_{1-3} through frames IIId, e. Sounds occurring in these latter frames and not in any other frame are C_4 .

In examples 6 - 13, [p, 1, m, q,] meet the requirements for frame IIId and frame II. Others which occurred in frame IIId, not in frame II and now delimited and defined as C4 in frame IIId are: 5. $\underline{\underline{w}}(C_4)$ [1 $\sqrt[4]{a}k+1$ $2\underline{\underline{w}}$ $\sqrt[4]{a}$ we live here S.R., p. 4; 54. h(C₄) [1 kwes ca:m+lah i:nys vələw m 3] I made a mistake Bis; p. 4; 55. y (C₂) [kak+liyok+liyæ:v+lltə l] I don't take it with me L.S., p. 9; 56. \underline{s} (C₂) [1 θ în+l \underline{s} 1tə 1] the only one JI, p. 1; 57. \underline{t} (C₂) [1 wanyll +l' $\hat{2}\underline{t}$ ui l] a stove inside the house 5C, p. 5; 58. k(C,) [1 va·m qwe· ny pay +1 əkaym +1 1m +1 iclm +1 evi 3] now things are different, they say, I hear JI, p. $\hat{\mathcal{P}}$; 59. \underline{c} (C₃) [qwestunyút +1 úcol 2] they went to school there B.S., p. 1; $60. \underline{v}(C_3) [l \, nyulwi + \underline{v}mlm \, 2]$ I went back home B.S., p. 9. Sounds occurring in IIIe are: 61. $\underline{\underline{n}}(C_4)$ [2 $u^1\underline{\underline{n}}u^2$; 3] a proper name L.S., p. 5; 62. $\underline{\underline{\theta}}(C_2)$ [1 hlom ticinnyum +1 aig lm] they turned into rabbits BUFF., p. 11. 6. $\underline{t}(C_2)$ [lu: it=əm l] they saw it then BUFF, p. 26; 6 a. $\underline{c}(C_3)$ BS, p. 22.

All sounds occurring in any of frames II - IIIe and not in frames II, Ia are C. C are sub-classified as follows: (see p. 5λ for C_1 , C_2 , C_3 .) All sounds occurring in frame IId are C_4 : [w, h, y, s, t, k, c, v]. Included in this class are then all those occurring in frame II where V_1 a was not the third sound after [+1]. This is C_4 a: [p, q, 1, m, k]. All sounds occurring in frames IIId and IIIa-c are C_5 : [p, c, v, t, k, s, y].

All sounds occurring in frames II, IIId, and IIIa-c are C_6 : [p, k, c, v].

All sounds occurring only in frame IIId are C8: [w, h]. All sounds occurring only in frame IIIe are C_9 : [n].

All sounds occurring in IIIe and any other frames are C_{10} : [t, θ , c, v]. (This can go on almost indefinitely, but I think it is required for a full classification of sounds.)

5.1.8 There is not one environment in which all C occur. But no C here can occur in frame I, Ia and no sound occurring in frame I and/or Ia occurs in frames II - IIIa-e. Therefore, although, for example C_9 , [n], can only occur in one diagnostic frame here, frame IIIe, but cannot occur in other diagnostic frames in which most C occur, IIId, it is linked to these other Cs negatively (no C occurs in frames I, Ia,) and, positively, by occurring in a frame, IIIe, in which other C occur which do occur in diagnostic frames in which most C occur. These are C_{10} , which occur with [n] in IIIe, $[\theta, t, c, v]$. Therefore, such sounds as [n] could not be V_3 , they could only be C. All C are grouped together then as not occurring in frames I, Ia, and at least occurring in diagnostic

All sounds occurring in any of frames II - IIIe and not in frames II, Ia are C. C are sub-classified as follows: (see p. 5λ for C_1 , C_2 , C_3 .) All sounds occurring in frame IId are C_4 : [w, h, y, s, t, k, c, v]. Included in this class are then all those occurring in frame II where V_1 a was not the third sound after [+1]. This is C_4 a: [p, q, 1, m, k]. All sounds occurring in frames IIId and IIIa-c are C_5 : [p, c, v, t, k, s, y].

All sounds occurring in frames II, IIId, and IIIa-c are C_6 : [p, k, c, v].

All sounds occurring only in frame IIId are C8: [w, h]. All sounds occurring only in frame IIIe are C_9 : [n].

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frames in which no V_3 occurs, but in which C restricted and not restricted to a given frame may occur, and by these frames, the Cs having restricted distribution are linked to those Cs more widely distributed.

There is one sound that has the most defective distribution of the lot. It never occurs initially or before a $[V_3]$. ([t] never occurs initially but it can be classed as C_2 .) This is [ŋ]. It is delimited in the following example: 64. [l & nywe3] will you give it to me? SR, p. 16. [ŋ] does not occur in any of the frames described. When it occurs, however, it is always ambisyllabic. This is, it always occurs with [-4]. Since this is a C and not a V characteristic, this is the only possible distributional feature linking [ŋ] to C. It therefore is classed as a C, C_{11} .

- 5.1.9 This classifies and delimits all sounds occurrent in Havasupai. Thus far, only a C and V class has been defined, but with respect to these diagnostic environments at least four C with particularly restricted distributions can be classed otherwise: [w, h, n, n]. In 5.3 [w, y] will be shown to have special distributions with regard to the placing of syllable boundaries not shared by any other C or V.
- 5.2 In the following section, definitions of a vowelswill be discussed.

Because of the sequences which have been shown to be possible after [+] or [#]: VC, CV, CVV, CCV, CCC, VVV, CVC, VVC, and others, a definition of Vs as occurring in a particular slot in the syllable, initially, finally etc., was not possible at the outset. Also to have defined V as filling "nuclei" slots and C as filling "marginal" or "terminal" slots in the syllable was not possible at the outset for two reasons.

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In the first place, slots don't occur out of thin air. A given slot must first be defined by features independent of those sounds which are to be classified, otherwise it is a circular definition. That is, I don't believe a definition, at the outset, of C as occurring intervocalically is possible without having defined V first. Otherwise it is circular, and if one is to speak of a single C or V at all these must first be delimited as such. The second reason is closely allied to the first. Nuclei may be defined as those sounds occurring with some suprasegmental feature, and only V (or some syllabic C) are nuclei. But what defines that particular slot where stress or pitch etc. are to be written? It cannot be V, since that is precisely what the stress or pitch are supposed to define. This would involve another circularity. Vs or Cs must first be delimited and defined by other criteria, primarily neutral like juncture, before any phonetic component which occurs simultaneously with a given phone can be written or even, in a strict sense, associated with it. (Chest-pulse definitions of V can be so classified, but, moreover, such a definition is too fine a distinction and too subjective for any verifiable definition of C or V.) Also it is not consistent with the phonetic facts to write, say, stress or pitch only over V and not C. Some sounds, defined distributionally as C, like nasals, or fricatives may occur with high and low pitch, strong or weak stress. It is merely an orthographic convention to write stress or pitch over V and not C, defined distributionally.

Canonical shapes of phones, in a strict sense, can only be defined by occurrences in slots defined by the particular linear combinations of [+] and [-] junctures. It has been shown, particularly with

regard to Havasupai, and perhaps generally with regard to other languages, that [+] [-] contrasts are the only means to define and delimit phones and syllable types. Other criteria being either circular in definition, or ambiguous and inconsistent or both.

- 5.3 Now that all C and V have been defined, the allophones of [+] and [-] are:
 - 1. C+IV (separate syllables); C-IV (same syllable); V-6V (separate syllables. This will be explained more fully later.)
 - 2. +3CaCb: (Non-identical consonant clusters where Ca is the onset of the same syllable in which Cb is the second member.) -3CaCb: (Non-identical consonant clusters, where Ca is the close of the syllable immediately preceding the following syllable of which Cb is the onset.)
 - 3. +5C and -4C have been discussed.
 - 4. Ca₁ © Ca₂Cb (A consonant sequence in which Ca₁ as first member of a consonant cluster is both onset and closure of two syllables, and Cb is the second member of the syllable of which Ca² is the onset. © here contrasts with [+3] and [-3] and must be set up as a separate phoneme since Ca © CaCb, -3 CaCb, +3CaCb contrast syllabically, because the occurrence of Ca as ambisyllabic in a sequence of CaCb is unpredictable.)

The occurrences of [-6] is in complementary distribution with [+] as well as [-]. This will also be true of some occurrences of [-3] in those consonant sequences where it is predictable. However, the actualizations of [-6], [-3] in all these environments is more

similar to that described for other allophones of [-] than to any allophones of [+], except [+1]. That is, in all the occurrences of these [-] allophones, the sequential phones always have some ambisyllabic feature, while [+] allophones never signal this type of syllable division, except [+1]. Therefore, [-6] is grouped with [-].

5.3.1 In the following section syllable division in all possible occurrences of C and V will be discussed. Only exceptions to general rules will be exemplified, and only one example from each manner class. (see IPS of CC for others.) [-4], [+5] and [+1], [-1] have already been discussed.

Some occurrences of [+] and [-] in 2-4 member consonant clusters in medial position may be predicted from the sequential phones. This includes a large percentage of consonant clusters. However, for the present [+] and [-] will be written wherever they occur, since in some consonant sequences they are unpredictable, and it would be simpler to write them.

All 2 member non-identical consonant clusters in medial position occur with [-3] except sequences of: 1.[C (not [w] or [y] plus [w~y]]; 2. [s plus S or N]; [F plus S or L]. In all three cases contrasts with [+3] and [-3] which in turn contrast. Examples of 1. are S/y/: 65a. [3 nylhác mákiyők © kyúc 0 2] It used to be in the back SR, p. 8; 65b. [2 kyúci+3 kyúi l yúckyúd 0 3] I thought they would be (live) forever, JII, p. 1; 65c. [yúk-3 yúclnyə yúcltəm l] we used to stay there a long time LS, p. 2; S/w/: 65d. [3 vòk © kwák l vòk © kwák l vòk © kwák l

they took it over there BUFF, p. 2; 65f. [1 9^{i} d+3 kwá:0(k 2] they sat there, BS, p. 8.

5.3.2 66a. F/y/:[2 tun @ nyuv @ vyucucum 3] they used to do that

CA, p. 11; 66b. [3 gak nyu+3 vyuc 1] they don t do that, J p. 7; 66c.

[2 tunyuv-3 yuyt 2] it's like that, DWl p. 5; F/w/ 66d: [1 nyu+3 vwicum 1] they do that there, HSPD, p.3; 66e. [1 vav@ vwicik 1] this is what they do, [aundry, p. 7; 66f. [3 nyuv-3 wiciat əumva m 1] they don't do that now, PDLS, p. 9;

5.3.3 N/y/ 67a: [2 tuhánım @ myúcım @ myûwic, m-3wic]] what they do is good, LSPD, p.]; 67b. [1 nyu+3 myúk 1] it happened like that, 4C p. 7; 67c. [3 dam-3 yúcım 3] they come there, Buff., p. 26; N/w/ 67d: [1 vdm @ mwi.c.k 1] we do it now, BW, p. 10; 67e. [3 gwénc vdm-3 wic.k 1] they do anything, SR, p. 10; 67f. [1 wik-3 wim-3 wic.k pakeiáy 1] the doctor finiæhed it, J3 p. 11; 67g. [3 mwén nyu+3 mwén+1?icım 2] if you do it, they said, SR, p. 7; L/y/ 68a: [2 papú tadvol @ lyák-3 yák 1] I lay where they lay dead men (hospital), 1C, p. 2; 68b: [3 hal-3 yúclk 3] they came from there, PW, p. 1; there are no [+3ly] sequences. L/w/ 68c: [1 təl-3 wáy-3 we ay tlk 3] they were married before, JIII, p. 1; 68d: [3 pəqú:inynyút-3 wayók 3] they sit there with the women, P+W+, p. 5.

5.3.4 [s] occurs finally only in the sequence: [pæ·s] money, a Spanish loan of /pesø and [phæ·s] Bass, a proper name. It is only when preceded by [æ·] (or [s], see below), that [-3] may occur between [s] and C in sequences of [pæ·s-3 C (not [w] or [y])]. In [tss-3 h], [-3] always occurs between [s] and [h]. When [pæ·s[w] or [y]]

occurs [] [-3] contrast. ([pæs]~[pês]~[pês] money.) 69a:

[1 pæs-3 pæs-cum 2] they give us money, S.R., p. 8; 69b: [pæs-3 gæn]

nyúwit, lk 1] that's why they have money, P.D.L.S., p. 3; 69c:

[2 nyûktê s-3 há?19lk 3] they hang many there, 6C, p. 3; 70a: [3 kwé]

2 phæs-3 yæ?pɛk 1] Bass was living there, L.S., p. 7; 70b:

[2 tuphæs © sy Y:k 1] I just get money, L.S., p. 16; 70c: [2 pɛs-3 yɔ́·c lkvæwiclm-3 wiclk j] they also get money, 7C, p. 11.

When [s] C (not [w] or [y]), occurs in any other sequence but those in which [-3] is predictable, exemplified in 69a-c, [c] and [+3] contrast. [s] S 71a: [2 tes spá:ymicignyuwiclk 1] they lean it against something, 5C, p. 1; 71b: [2 kwè+3 sp5·clm+liqwál 1] I wish we knew something, B.S., p. 8; [s] N 72a: [s nyàtes smá·clk 1] they get lost (dreams), P.S., p. 8; 72b: [2 te+3 smá·cemígayúm 3] they have dreams or something, Buff, p. 19;

In sequences of [s1], [+3] occurs; but when any other fricative but [s] occurs as the first member in this consonant cluster [-3] occurs:

73a: [3 miyæé·lk-3 kə+3sli:um 2] they fry bread, 9C, p. 11;

73b: [2 wáksi+3 slɔśkl] jelly in the spine of cattle, 7C, p.3;

73c: [3 páv-3 luwæé·vanyík 3] when a man wants to marry, J1, p. 19.

In sequences [sw~y], where [s] is not preceded by [pss] or [pæ:s], [] and [] contrast: 74a: [2 gwé təs] swi:um 2] Something used to scrape off the hair of animal hides, Jl, p. 1; 74b: [3 svlnyu +3 swa:dclm 1] I hear it when they sing, Buff, p. 46.

5.3.5 In sequences of [kl], [] and [+] contrast. In any other SL cluster [-3] occurs. 75a: [3 nyuk] klæ:wk 3] hot coals to the left, 9C, p. 5; 75b: [2 nyù+3 klapnyukkəlyūk 2] they flattened it there, 7C, p. 8;

75c: [31áp-31ápclk 2] they make "patties," 6C, p. 5.

In sequences of SN medially, a [-3] always occurs. Finally however /SN/ may occur. This is written /SoN/ phonemically, since [æ.] the allophone of [ə] never occurs in this environment. An example of /SN/ is: 76a: [tû: nyætqépm 2] at night, PW, p. 18.

In sequences of [h] C, it is difficult to spot the division. I think, though [-3] always occurs between them.

77a: [3 mdh-3pekyép 3] signals the end of a narrative, 6G, p. 1;

77b: [1 nyamányə má:tah-3mé·3] they cured my (dead) mother, JIII, p. 2.

5.4 There is a syllable division after the first C in three and four member consonant clusters except in the following sequences where division comes after the second C: LSC; CyC; C1(w~y) C2C3 (where C3 is not w~y. If C3 is w~y and C1 is w~y, the division is after C1.); [S/n/C]; [S n~k y] (Before the first C); /hmt/; /tsn, tsc/ (Belong to

LSC, 78a: [3 sálk-3 tékəhwákə 1] two-thumbs (a proper name)

J12, p. 1; 78b: [2 gwlk-3 məqwlk3] it rolled over and over, C.A.,
p. 10.

CyC 79a: [1 pany-3 tayêc 7] (dead) father, JI, p. 2; [ny-3t] freely varies with [nyət]: 79b: [3 wa:nnpanyə tayac 1] Juan's dead father, DWI, p. 9; 79c: [1 təhity-3 hi:ty-3 ciclk 2] they stacked them, H.S. Laundry, p. 4. I have no example of free variation for 79c as I have for 79b, a. These are the only examples of Cy-3 C in the corpus, although Cy# is common.

w-yC₂C₃: 80a: [1 gakmakhaym-3 kúny 1] before the white man, S.R., p. 19; 80b: [1 dam imtəlwa:yv-3 tlkh 1] no more marriages, Jl3,

same syllable.), FSS.

p. 9; 80c: [3 02.wv-3 c2h-1 nyim 1] when they were going to have the baby, J5, p. 7; 80d: [1 hayk-J 0is nmyuvyúk J] they did like the white doctor, J5, p. 12.

Examples of a syllable division after the first /y/
when the third C is also a /y/ is: [l nyuwiczka:lsk_oy-3 ny 7]
they made a wooden fence, DVII, p. 2; 80f: [2 yony-3 gakmáy-3nyə
sa:v 1] 8C, p. 13; [] may contrast with [-3] in these
sequences: 80g: [3 twa.yn] nyzm] later, 9C, p. 5.

Medially, sequences of [S n C (not w y)] occur with a division after [n]. Sla: [l gakmatn-3 m2:h+litik l] not supposed to eat that meat, we told her, JII, p. 25.

When /y/ is the C, [Sny] varies with [S?-3 ny] [Sn @ ny], [S-3 ny], [SVny]. 8lb: [3 mat?-3 nyú:nyimnyuwic.nyú: 3] the land that they own, DW2, p. 5; 8lc: [3 matn @ nyú:k @ kwayók 2] we were living at drift fence, JIII, p. 4; 8ld: [2 si:vcihak-3 tət-3 nyú:tk l] they wrote their names there, HSII, p. 11; 8le: [1 mat.nyuh 2] meat, PD, p. 12. (8la and 8le involve the same morpheme. Therefore [n] is written /n/ medially. Similarly, in citation, the morpheme in 8lb,c is [mat.m].)

Initially, I have heard the sequence [tn-@ny] which varied with [tiny] and these two with 3ld.

8lf: [3 tn @ nyúteú:ìk l] I went to school, L.S., p. ll;

8lg: [2 tinyú:t+lú:côl] school, B.S., p. l.

Another example of [Sny] varying with [SVny] is with [c] as the S. 8lh: [3 yúcnyátch l] I wish we were, B.S., p. 25; [eny]~[eny]: 8li: [3 kak kée káv @ vyúcnyu l] there isn't any, B.S., p. 39;

An example of [Sm-3 y] is: [l nyandopm-3 yoock 3] pick them at sundown, C, p. 6. This is the only example of [m] medially. I have no example here of [m] varying with another sequence. However, medially, [m] here is written phonemically as [em], for the same reasons [em] was written finally.

In the sequence $[p \not \approx \cdot s]$, or any of its variants listed above, [-3] occurs after [s], In any other sequence [+3] occurs before [s] contrasting with [e].

82a: [1 pes- nyayok 2] when I get money, L.S., p. 16;

82b: [1 pæis-] nyuta:ym 1] lots of money, L.S., p. 10;

82c: [2 tu+) snyú:k 3] again, Buff., p. 38;

82d: [2 ny Ls O rnya: cateop 1] they will give me severe punishment, C.A., p. 10.

Sequences of [skw] and [sky] medially belong to the same syllable.

83a: 2 mpå * 3 skwi·c kpå 1] they make men stand, J51, p. 8; 83b: [1 hå + 3 skyé·lcik 3] they irrigate it, DW 2, p. 8.

The sequences [ts $\boldsymbol{\varepsilon}$] and [tes $\boldsymbol{\varepsilon}$] vary initially and [tsn] varies with [tesn]. There are no examples of [tesn], but the [te] is the same sequence in the first variation and may occur

Another example of [Sny] varying with [SVny] is with [c] as the S. 8lh: [3 yúcnyátch l] I wish we were, B.S., p. 25; [eny]~[eny]: 8li: [3 kak kée káv @ vyúcnyu l] there isn't any, B.S., p. 39;

An example of [Sm-3 y] is: [l nyandopm-3 yo.c.k 3] pick them at sundown, C, p. 6. This is the only example of [m] medially. I have no example here of [m] varying with another sequence. However, medially, [m] here is written phonemically as [em], for the same reasons [em] was written finally.

In the sequence [pé·s], or any of its variants listed above, [-3] occurs after $\lceil s \rceil$, In any other sequence [+3] occurs before $\lceil s \rceil$ contrasting with [\bigcirc].

82a: [1 pes-3 nyayok 2] when I get money, L.S., p. 16;

82b: [1 pæis-] nyta:ym 1] lots of money, L.S., p. 10;

82c: [2 tu+) snyú:k 3] again, Buff., p. 38;

82d: [2 ny Ls O rnya: cateop 1] they will give me severe punishment, C.A., p. 10.

Sequences of [skw] and [sky] medially belong to the same syllable.

83a: 2 mpa = 3 skwi·c kpa 1] they make men stand, J51, p. 8; 83b: [1 ha+3 skyé·lc/k 3] they irrigate it, DW 2, p. 8.

The sequences [ts $\boldsymbol{\varepsilon}$] and [tss $\boldsymbol{\varepsilon}$] vary initially and [tsn] varies with [tssn]. There are no examples of [tssn], but the [ts] is the same sequence in the first variation and may occur

as [tesn] in citation. When [ϵ] occurs [-3] occurs between [[ϵ]]

84a: [1 tsc+3 & cik 1] they put poles there, DWI, p. 2; 84b: [2 tss-3 cudgalwek 1] they put sticks (poles) all around, 7C, p. 8 notice [1 tsc+3] > [2 tss-3 c] when [s] occurs, the sequence [s-3 c] may syllabify similar to [[s] S] in 7la,b.

An example of [tsn] is 84c: [l patsn+3 nu:n k 3]they wake them up, B.S., P. 12.

In [hmt], the syllable division occurs after [m].

85a: [1 2 hm-3 ténye wic & 2] they do it with squash, HSPD,
p. 2. This sequence may vary with [met]: 85b: [1 meténye 2]

squash, 6C, p. 2. No three member consonant sequence initially
has a break but [hm.t]. Usually, if the second and third members of a medial consonant sequence would have a division
between them as a 2 member consonant cluster, they have it
here as the second and third members of a medial consonant
sequence. This is not true of initial sequences since [k-3 y]
occurs medially but *[sk-3 y] never occurs initially or
medially. Examples of the former case are:
86a: [3 tuematnyeTah0-3 pitcock 3] only some ground left,
PDHS, p. 1; 86b: [3 wayoovcah-3 nyik 3] when you are going to
build a house, 5C, p. 1.

An example of FS.S is:

86c: [1 pacevc-tek 1] many people, 4C, pl.

The only clusters of 4 or more consonants which occur medially, (5 is the maximum medially and 3 initially) are those in which the three member consonant clusters which occurred initially occur. In a medial 5 member cluster, the only one recorded was with a \sqrt{y} as the second member, and the syllable division occurred after it. In all 4 member medial consonant clusters the syllable division occurs after the first C.

87a: [3 hany-3skyé.lctm l] after they irrigate, DW2, p. 8; 87b: [1 vatok han-3skyé.lc.k 3] they irrigate also, DW2, p. 10.

It is apparent that most of the exceptions to general rules of syllable division have to do with [w] and [y]. Therefore these two behave differently than most other C in this respect. Also [w] and [y] are the only C which may occur as third and fourth members of initial and medial consonant clusters, respectively. In these latter slots [w] and [y] behave as do V, but not C. For these reasons and these reasons only [w] and [y] could be sub-classified as semi-consonants. However, [w] and [y] have been written here and before only as notational realities. In 5.7 reasons for and against grouping [w] and [y] with [u] and [i] respectively, will be given.

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89a: [hak-3wikwi] he's doing it there,

89b: [ha+3kwikwi] he's weaving it there

90a: [hal-3yúkyu] he's coming over to the other side,

90b: [ha+3lyúkyu] it's there,

91a: [0am-3yúkyu] he's coming there,

91b: $[\theta_a + 3myúkyu]$ you're coming there,

5.5 In this section and 5.6 some remarks will be given concerning the justification for the syllable in Havasupai, and some on why every V in a V cluster is equivalent to a syllable (see 5.5.1), and finally, some additional reasons (see particularly 5.2 for others) as to why juncture can be the only criterion in syllable division.

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As syllable may be defined as having only one vowel. However this would be enough information to delimit only sequences of VV. In sequences of CVC, (C~3c) V or CVCV, as it was shown, syllable boundaries may occur in any one of five places in the first sequences depending upon the intervocalic CC or CSC involved: CVC1.CV, CVC1C2.V, (This was exemplified by [lk] in (op) in 4.2.2 and 3e in 4.3.1) where the ${\rm C_1C_2}$ occurs finally and medially and not initially and c_1 occurs finally and c_2 may occur initially. (This is Hockett's "interlude.") And in CVC1.CSCV, CVC1.SCV, CVC1SCV exemplified in section 5.2.1, not to mention the exceptions involving [s] and others exemplified in the same section. In sequences of CVCV syllable boundaries may occur in any of three places: CVC₁V, CVC₁V (non-ambisyllabic C), CVC₁.C₁V (ambisyllabic 9. Although all these syllables have only one vowel, they are all different syllable types. Therefore the criterion of only one vowel per syllable is incidental to the syllable type and therefore to the definition of the syllable. Once the syllable has been defined by other means, supplementary information regarding syllables as having only one vowel can be given, but this information is not crucial to the definition of the syllable.

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wary with sequences of [.N] and [.N] medially), and write as many syllables as vowels that occur in a vowel cluster would be too arbitrary at this point since there have been no general statements made regarding a pattern for syllables, already set up, whose constituents are only a V and in which no C or SC occurs. It is not necessarily the case that because sequences of phones with C or SC have been delimited as syllables, single Vs in sequence without C or SC are to delimited as single syllables too. There are, though, three reasons why I write every V as equivalent to a single syllable when they occur in V clusters.

It has been shown that most of the vowel phonemic norms occur as single V syllables in frame I and in frame I occurred stressed and unstressed, except [ɛ] and [u], to be discussed below. In frame I these norms were delimited as single V and simultaneously as syllables whose constituent was this one V. (Some phones not norms here were also delimited but since I am here referring to phonemic Vs in clusters, only the phonemic norms will be discussed. All phones not norms which didn't occur in frame I, occurred in frame Ia as V and therefore, even writing V clusters phonetically, i.e. without syllable division, the following remarks apply to them also.)

Although [ϵ] and [u] didn't occur in frame I, [ϵ] and [u] did in frame I. ([ϵ] and [u] are considered norms for [ϵ]

and [o] because they occur more often and appear less conditioned.) [o] does not occur as [o] in frame I, but, in free variation, [ó] occurs after [+1] but never before [-4] [+5] contrasts and therefore not in frame I. [e] does not occur at all in frame I. [e] and [a.] allophones both occurred in frame I. An example of [-6.] after [+1] is 3f in section 4.3.1. Another example is: 93: [l ham+lóhami. l] it may be the end or..., PDLS, p. 11. [o] and [ó] do not occur in frame I. However, since [ó] and [o] are Vs by frame Ia and can substitute for V occurring in frame I before [-4] or [+5], [o] and [ó] can be said to be a V syllable when occurring here after [+1].

The same cannot be said for [ɛ] or [u] since neither of these occur after [+1] in frame I. [u] may occur after [+1] when followed by another V and this V is always [u] or [i]. [u] never occurs after [+1] as [+luC]. Examples of these sequences are: 94a: [l ny.t+lu.c(t+luicahtêh 3] go to school, they should say, BS, p. 20; 94b: [l crv.t+luil(v l] I rode and they did too, PW, p. 2. Now [u] and [ɛ] never occur medially in a V cluster, [u] and [ɛ] always occur there. Therefore, since [?] ~p initially the fact that [u] and [ɛ] do not occur in frame I really does not weaken the general pattern for V phonemic norms which may occur stressed and unstressed as V syllables in frame I, because if neither [ɛ] or

[u] occur unstressed medially in V clusters there is no need to establish [ϵ] or [u] as V syllables in frame I or any other frame. All that is required is that [$\acute{\epsilon}$] and [\acute{u}] occur as Vsyllables (they do in frame I) since these do occur medially in V clusters. The first reason then for regarding every V occurring medially in V clusters as a single syllable is that, the pattern for V syllables, stressed and unstressed, has been established by frame I. The second and third reasons are related to each other. When Vs occur in sequence medially or initially they may occur with the same supra-segmental sequences as they do when occurring with intervening Cs and The third reason is the weakest, but I think it holds. I can detect no significant and consistent difference in length of time between sequences of V and sequences of Voccurring with intervening Cs and SCs, with the same number of V and under the same supra-segmental conditions. Examples and reasons for two and three follow. (Of course three can't be verified by these examples. ['] freely alternates with [^], see 7.

A three vowel sequence with [# 4: 95a: [2 uui 3] I saw it, FW, p. 2; 95b: [1 kakucım 2] a place, SR, p. 4.

A three vowel sequence with [# °C]:

96a: [2 ui 96m 3] let me see it, Buff, p. 23; 96b: [1 titcok]

it's level, L.S., p. 6.

A four vowel sequence with [C''C]:

97a: [l púletáv l] we're real sorry he died, JI, p. 2;

97b: [2 dacinyetav 3] real small ones, BS, p. 6.

A five vowel sequence with [C ^ '1'C]:

98a: [3 kaiaimo: 2] sometime around there, 25, p. 11;

98b: [3 wihakınpacac 1] flagstaff, P.W., p. 2.

A six vowel sequence with [C'.^'C]:

99a: [...kú ile v.cík 3] they understood it, B.S., p. 33;

99b: [l gweye gâku·cinyûm 3] whatever kind, Jl3, p. 3.

You will notice that length was constant except finally in 98a but that may be a feature of pause (see 7.3 ff). The sequences without V clusters may be a little longer sometimes but not significantly. Anyway, any difference, one way or the other would surely not be significant enough to say that under the same stress a sequence of V clusters is significantly and consistently longer or shorter than sequences of alternating C or SCV sequences. In two-vowel clusters there is definitely no significant difference. Furthermore a sequence of three sounds as CVV will be of the same length as CVCV under the same conditions: 100a: [2 bul 2] dead, JII, p. 2; 100b: [3cool 3] motion of mixing, C, p. 99.

There are then at least four reasons why every V in a V cluster should be considered a V syllable. Therefore they are cut as such. Of course [#C-V] and [#V-V] are the same

juncturally and [#C-V] is one syllable. However, C never occur as a single syllable as was shown in discussing frame I and the frame [+#x-V] was not diagnostic. Therefore that V and C share this common environment is non-significant.

In Havasupai, then, in any utterance, there are as many syllables as sequences delimited by /+/ /-/ contrasts. Every syllable has a minimum and maximum of one vowel, stressed and unstressed, which constitutes the nuclei or peak of the syllable. A syllable may have from 0-3 onsets initially and medially and 0-2 codas medially and 0-3 codas finally. (See 5.2.1 and/or IPS 9. for examples.) This is a language, then, in which, according to Hockett, Manual, pp. 59 ff. peaks are defined by juncture. Since Havasupai has stylistic and not morphemic pitch, i.e., no tone, and since, as I have shown in 4. and 5.4, the occurrences of supra-segmental features are not equivalent to syllables as defined by juncture but that interludes, ((op), contrasting with 3e in 4.2.2 and 4.3.1 respectively ([lk]), C+V and C-V minimal and sub-minimal contrasts (4.2 ff), and non-ambisyllabic and ambisyllabic contrasts, all occur, this is one language with no morphemic tone that has syllable juncture. This is contrary to what Hockett says on page 61 Manual, that only languages with

juncturally and [#C-V] is one syllable. However, C never occur as a single syllable as was shown in discussing frame I and the frame [+~#x-V] was not diagnostic. Therefore that V and C share this common environment is non-significant.

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3 I wouldn't care to say whether a [V·] is equivalent in length to a two syllable CVCV sequence, to a CV sequence, to a cluster of non-identical V etc. Hockett bases a syllable type on this type of relation, p. 55 Manual, but I wouldn't want to make such general statements and be held responsible for them, even disregarding free variation, in all and every occurrence of the sequences concerned. If he used longer sequences and more examples than one from connected speech, I don't think the results would be as unambiguous, clear and significant one way or the other. Hockett does not employ distributional information as primary criteria in delimiting syllables at all. The distributions of codas and onsets together, or separately as a class with V, or other kinds of peaks, are only given as additional information of the features of the peaks defined and delimited by some other non-distributional criteria. Hockett knows in advance what he wants to call a peak and then looks for this feature. It gives an air of circularity to his definitions. Only in Bella-Coola, p. 57ff, is the distribution of phones primary in defining the But here the V are so infrequent and rare, that only distributions of clusters of C (particularly when one is a resonant) can be syllable defining. However, every single C is also a syllable. Also I see no reason, as far as what Hockett has presented, for separating peak types defined by stress and vocoid, Spanish, p. 54, and those defined only by vocoid, Fox, p. 53. The only reason for separating them appears to be that in Spanish [u] and [i] may occur and if they are grouped with their vowel counterparts every vocoid is not equivalent to a syllable, and some other criteria, stress, has to be used. Non-syllabic [u] and [i] would not be stressed anyway, no matter how they are grouped allophonically. Hockett, presumably, has grouped them with V and therefore thinks of them as V. If he had grouped them otherwise, Spanish would probably be of the same type as Fox. Furthermore, no matter how they are grouped, non-syllabic [u] and [i] could be marked somehow, as not taking stress. In any case to build a different type on only one arbitrary difference seems arbitrary. In peak defined by tone, Hockett says that Bariba p. 54, has the same vowel system as Senadi p. 53, but Senadi is a vocoid type and Bariba a tone type. The only difference, in these two examples, is that in Bariba, the occurrence of tone on the two nasals is unpredictable from the flanking phones. Hockett then says "the essential ingredient of a (Bariba) syllable is tone," p. 54. I wouldn't say so. If out of the total number of phones that can carry tone it is only unpredictable on two, (Hockett doesn't give the number of Vs in Bariba), I wouldn't say that tone is essential and vocoids incidental. The trouble, I find, with these differences, as with Spanish and Fox, is that different types are set up on the basis of ambiguous criteria, (how one treats [u] and [i] in Spanish), and also on too little significant differences with ample examplification from connected

speech.

5.6 The justification for juncture as the primary delimiting and defining criterion of syllable division has been pointed out in 5.5 and elsewhere. However what is the justification for the syllable? Is it a useful unit in the grammar? If the syllable may not be coterminous with any other phonological unit, which may serve as frame for the distribution of phones, it is fairly certain that the distribution of phonemes within the syllable as a frame would be different, in some ways, from the distribution of phonemes in the contour, say.

In examples (a), (b), 4., distributional statements within the contour as a frame would have [m] occurring medially. However, this is only half the story of intervocalic [m]. In (a), [m] may be ambisyllabic. It may be syllable final and syllable initial. In (b), however, it is only syllable initial. Similarly, [1] in (e), (p) is contour medial, but in (o) it is syllable final in a CVC.C sequence and in (p) syllable final in a [+1 VC.C] sequence. (o) is syllableized as [kɔkəwæ--1-3 kə vavayu 1] name of a place, LS, p. 6; (p) is syllableized as [1 nylham+11·1-3 kicitava 1] worm-in-his-mouth was there, SR, p. 17.

In (w) and (x) [1] is contour final in CVC and VC sequences respectively and in 3e, it occurs as C1 in a [VC1C2+1] syllable.

The distribution of phonemes, then, with respect to contour and syllable differ, I think, importantly. It is here that the justification for the syllable, or the contour, lies. As an organizational unit which functions as a frame to complete statements concerning phoneme, or phone, co-occurrences and occurrences which could not be handled in the frame of any other phonological unit when given phonological units may not be coterminous.

6. In 6, 22 examples are given to phonemicize [i] and [u] and to discuss unit-cluster solutions.

In a previous section [u] and [i], written as [w] and [y] respectively, were sub-classed as semi-consonants within the consonant class. filled C slots in a diagnostic frame IIId and [i] also occurred in C diagnostic frame IIIb. They filled V slots as the only non-V (those phones that didn't occur in frames I, Ia) which occurred as third and fourth members of consonant clusters. This last slot could be an auxiliary diagnostic frame for V. They were separated from C and V because of their behavior with regard to syllable division. Since, then, they shared occurrence features, i.e., occurred in diagnostic frames for C and V they were separated as an independent class, semi-consonant. This term is from Hockett. It refers to a phone class with the occurrence of features of $\begin{bmatrix} i \end{bmatrix}$ and $\begin{bmatrix} u \end{bmatrix}$ but differentiated from other such phones by always occurring as 'margins' (Hockett's term) to peaks in syllables. That is, they never occur with stress. Now the sequences *[#sku], *[#ski], *[#snu] or *[#sni] do not occur, stressed or unstressed. An example of [#sku] is: [2 skuicɔ̃l 2] a shute (where the ropers stand), PW, p. 11. ([#sku] was not exemplified previously.) Therefore as third members of these consonant clusters, [u], [i] and [u] in [#snu] (see 5.2.5), are in complementary distribution with [i] and [u] and [# snu], just distributionally. These are the only three member initial consonant clusters which occur, and the only 3 or 4 member consonant clusters occurring medially with [s] as the initial C. Also [u] and [i] are in complementary distribution with [u] and [i] when occurring in frames

HIId, b. Therefore, while [u] and [i] in all these positions are in complementary distribution with [u] and [i], they are simultaneously sharing diagnostic occurrence features common to C or to V. The occurrences of [u] and [i] then, as far as these environments are concerned, cannot indicate unequivocally whether they should be grouped with [u] and [i] respectively, or separated from both C and V as semi-consonants.

All these environments show [u] and [u], [i] and [i] to be in complementary distribution, but they also show [u] and [i] behaving as C, not as the V, [u] or [i]. Now [u] and [u] occur initially before [i] and so may [i] and [i]: 1. [l'uicantlh 3] they should say it, Buff, p. 20;

- 2. [1 wiclm mwi:c 1] they always do it, Buff, p. 2;
- 3. [3 yiclmyovclka?ici 2] they hoe up there, they say, DWI, p. ll;
 4. [1 liclm 2] they said it, S.R., P. 16. With regard to just the slot,
 non-syllabic and syllabic phones contrast. With regard to stress,
 [u] and [i] may vary with[û] and [î] here. Therefore, although [u]
 and [i] do not take any stress, [u] and [i] may occur stressed and also
 unstressed. [i] may occur unstressed in other positions and so may
 its allophone [1].
 - 5. [l ni lha Imáki išk () kiúcθο 2] it used to be in the back, S.R., p. 8;
 6. [l kaiúlm+l māh 3] what for, B.S., p. 33;
 - 7. [1 hal-3 iúî0 lk 3] I went there for awhile, Buff, p. 5.

 Now in 7. /^ '/ will be set up as phonemic stresses. Therefore to differentiate, say, [i] and [i] initially, [^] could be written there since it has to be written elsewhere anyway (although [i] and [i] do contrast in unstressed position here.) However, in medial position, if [i, î, î]

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were grouped together, ([i, 1] at least must go together), some additional notation would have to be written to distinguish them in unstressed position, and if that is done, [u] and [i] might as well be grouped separately. It would be much simpler, furthermore, since [i, i, l] occur unstressed, distributional rules involving sequential phones would have to be given to account for them as allophones. This would involve occurrences of [i] and [u] in frames IIId, b, as third and fourth members of consonant clusters of which [s] is the first member, occurrences in 5.3.2 etc. and would have to include all occurrences of [i] or [l], assuming for the sake of argument, they are always in free variation, which they are not. Occurrences of [i] and [l] in 1-7 are symptoms of what these rules would entail if [i] was grouped with [i], and no simple one or two general rules could be given in 1-7. For example, in 6., if 4 vowel clusters occur medially and [i] only occurs stressed in these sequences, that would account for [i] in 6., another rule would have to account for [1] in 6, though, and so on for every unstressed occurrence of [i] or [1].

Because, it appears that grouping [i] with [i], (the remarks above also apply to [u] and [u],) would be more complex than is worth the effort and because they actually contrast in unstressed position [u] and [i] are written as [w] and [y] and are grouped separately, as semiconsonants, from [u] and [i].

6.1 In 6.1-7, cluster-unit solutions are discussed.

Sequences of [Cw~y] are treated as clusters because there is absolutely no reason not to, and to set up another class of phonemes would just be complicating the IPS unnecessarily. No consonant clusters

occur initially except [Cw~y], [[s] C] and one example each of [hm] and [tq] (See IPS for example of [hm], [tq]. The others have been exemplified.) Now if [Cw~y] were written as units, [[s] C], [hm] and [tq] could be also, since the former is the only initial 2 member consonant cluster with a fricative as the first member (except only hm) and the latter the only one with a stop as a second member. The criterion of structural pressure then would set up as units all 2 member initial C clusters and also, by the way, all 3 member C clusters since, as I have shown, they are as restricted as the 2 member initial C clusters.

However, there is another reason why these sequences are treated as clusters which is more pertinent to the problem. What are the so-called contrasts of unit and cluster? Is there such a fact? I don't think so. A sequence of phonemes written as a unit or a cluster is merely the result of a way of phonemizing, if junctural criterion is not taken into account. Every initial C cluster sounds the same, i.e., as units, as do clusters for which a unit-cluster problem always arises. [#sp] is similar to [#kw], juncturally. Medially I have shown that the sequences [C-] w~y] and [+]Cw~y] may occur, as may sequences of [[S]-3 C] and [+3[S] C]. With regard to these junctures, initially and medially, then, [kw] and [[S] C] behave the same. When [+3] occurs these sequences sound like a unit, but when [-3] occurs they sound like a cluster. I see no contrast here of [kw] and $[k^W]$ or [[S] C] and [[S] C], but I do see a contrast of just [+3] and [-3]. Similarly, initially, I see no contrast of unit-cluster at all. All initial sequences sound like units, and all initial sequences are ambiguous, as I have

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indicated, with regard to structural pressure. Therefore, [Cw~y] are clusters.

6.1.1 Sequences of [ts], [C[h]] are also written as clusters.

Medially and initially, [ts] occurs as [t-3s]. When it isn't, it freely varies with the sequence [tss]. Examples of this last variation were given in 5.2.5. An example of [t-3s] is:

8. [mat-3 silæ·lk 3] they plow, DWII, p. 4. Therefore [ts] is a cluster.

When [C/h] occurs initially there is the same ambiguity in structural pressure as with the sequences in 6.1. Medially and initially, though, [C/h] V freely varies with [CV] and this is the main reason why [C/h] is not written as a unit in Havasupai.

Examples of [C/h/V] freely varying with [CV] initially are:

9a: [2 pát, ə təop 3] it's hard, Buff, p. 30; 9b: [2 phát ə təo l] it's hard, Buff, p. 40; 10a: [2 pháy kɔ ləwi: l] they cut it all up, Buff, p. 23; 10b: [2 páy túnyə nyuvyúc 3] just get it all like that, DWI, p. 7; lla: [2 ká:yv l] different, H.S.P.D., p. 4; llb: [3 khá:y yɔk l] get different things, H.S. Laundry, p. 6.

Examples of [C/h/V] ~ [CV] medially are:

12a: [1 vathunyə thu 2] they just took her, L.S., p. 4. See example 10b for variation of [thu] and [tu], medially.

1)a: [3 təɔ.lvə clpheə l] sweat-house cover, Buff, p. 3 4; 13b: [1 clpek] they covered it, Buff, p. 3 6;

14a: [2 từ phaế s c số: k l] they get money, L.S., p. l;
14b: [3 wố?mu paés wicuv]] the Navahos have money, B.S., p. 29.

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Examples of [C/h/V] freely varying with [CV] initially are:

9a: $[2 \text{ p\'at}, \Rightarrow t \Rightarrow \acute{o}p \ 3]$ it's hard, Buff, p. $\stackrel{?}{3}0$; 9b: $[2 \text{ ph\'at}, \Rightarrow t \Rightarrow \acute{o} \ 1]$ it's hard, Buff, p. 40; 10a: [2 ph'at k'al] they cut it all up, Buff, p. 23; 10b: $[2 \text{ p\'at} \text{ t\'any} \Rightarrow \text{nyuvy\'uc } 3]$ just get it all like that, DWI, p. 7; lla: $[2 \text{ k\'a}; \text{yv} \ 1]$ different, H.S.P.D., p. 4; llb: $[3 \text{ kh\'at}; \text{y\'ak} \ 1]$ get different things, H.S. Laundry, p. 6.

Examples of [C/h/V] ~ [CV] medially are:

12a: [1 vathúnyə thủ 2] they just took her, L.S., p. 4. See example 10b for variation of [thu] and [tu], medially.

13a: [3 tə5.lvə c4 phéə l] sweat-house cover, Buff, p. 3 4;

13b: [1 clpék]] they covered it, Buff, p.] 6;

14a: [2 th phae s c so:k l] they get money, L.S., p. l;

14b: [3 wá?mu paés wicuv 3] the Navahos have money, B.S., p. 29.

Without some knowledge of the morphological word, of course, these sequences would contrast, and it would take too many rules to predict [C/h/V]. But in any case, they do freely vary. Phonologically, though, structural pressure is just as ambiguous as in 5.7.1 and also, as in 6.1.2, [+3] and [-3] are the differences when [C/h] is heard at one time as a unit and another as a cluster. In example 12a [+3th] occurs. Examples of [t-] h] are: 15a: [3 tù tût-3 há:t 3] I just went to work, L.S., p. 12; 15b: [2 təmátlm mat-3 háy 1] it burned in the damp ground, 7C, p. 5. Only [-]] occurs here. There is no free variation. These contrasts of [-3] and [+3] also apply to other [C/h], e.g. only [/s]-3h] occurs, as was exemplified in 5.2.5. Because of these reasons [C/h/] is written as a cluster. /h/ is a phoneme and therefore is written wherever it occurs, whether or not it freely varies in certain sequences. 6.1.3 On the other hand, [tš] never occurs with [-3] and no SF clusters occur initially or medially. [ts] is always heard as a unit and always occurs with [+3]. Furthermore, [s] is bound to [t]. It never occurred, except once, without following /t/. This also sets [ts] off from other consonant clusters. The only example of [s] occurring without [t] is when the sequence [ts] freely varied with [s], and this occurred only once in the entire corpus: 16a: [2 gak nyud+lúk-3 slpám 1] they shoved us out, IC, p. 4. In

Only / +/ allophones will be written now where they are subminimally or minimally contrasting with / -/. In sequences where any

citation [-3 slpam 1] is [tslpam]. For these reasons, [ts] is written

as the unit [c]

given allophones of /+/ or /-/ were predictable nothing is written.

/+/, then, is written in (C) C+V, V+C (non-ambisyllabic C), C+SC.

© is not written, for reasons already given. Also, /-/ is not written.

7. In 7-7.2, 23 examples are given to describe and contrast the different register types and to show that these types are not conditioned by any segmental or supra-segmental phonemes alone or in combination. Also, it will be suggested that with regard to the registers, three stresses have to be written.

The segmental phones occurring in the syllable are related to the syllable not merely as constituents of the syllable but through the mediating features of /+/ and /-/. Sequences of phones become syllables by the contrasts of / +/ and / -/. On the other hand, the relationship between the sequences of syllables occurring in a contour is not the same as the relationship of the segmental phones to the syllable. There are no mediating features which relate, or tie, the total sequence of syllables occurring within the contour to the contour as a unit. All the supra-segmental features which occur in the contour function independently of the contour, in this sense, and of each other. In 7.2ff stress, length, pitch, will be discussed and their relations to each other, and, alone or in combination, to the contour. At the end of each section, phonemes will be set up. Although minimal pairs were given for length in citation (see 3.), it will be shown that, in connected speech, the signals often used in citation to distinguish one utterance from another are usually replaced, in morphophonemic free variation, by other signals, which may not have occurred in citation in that utterance but which

perform the same distinctive function. Therefore, that length is distinctive in citation is really irrelevant to the description of length in connected speech. Since length in connected speech may act similar to features, say stress, for which there are no minimal pairs in connected speech. In section 8, a closer look at the contour will be given with particular attention given to pitch, stress and length as they relate alone or in combination to the contour boundary markers. 7.1 First, though, another feature of contours must be discussed. In the preceding sections pitch was written in vowels. Spectrograms show that the Havasupai utterance, with regard to pitch, is a series of peaks and troughs which form a wave-like pattern. These peaks and troughs are of amplitude as well as pitch. From these peaks and troughs of pitch, I could distinguish at least four phonetic levels of pitch which individually were not necessarily bound to any degree of stress and/or length. The relationship of pitch and stress will be discussed further in 7.3. That Havasupai is a language in which the sing-song, rise and fall of the pitch throughout an utterance must be taken into account is established by the spectrograms, if not impressionistically as I heard them. It is not surprising, then, that in Havasupai every utterance is distinctively pitched to a given register which, like the pitch levels, can be easily distinguished as high or low, falling and others; and within these registers the different pitch levels themselves are still heard. The function of these register types and pitch levels is probably expressive and this function will be discussed in 7.9. These register types though appear to have another function. Pitch I usually occurs with ['] or ['] and never with []. Pitch 2 may occur with ['] or [']

but never with [v]. However when a pitch, which would be 2 or 3 in a N/ormal or H/igh pegister, and there would occur with [v], occurs in a L/ow R/egister contour, the pitch levels in the LR, themselves, although retaining their rise and fall, may also become correspondingly lower and therefore a pitch 2 or 3 occurring with [] in a NR may be reduced to a pitch 1 in LR and there 1 would occur with []. In order to account for these variations, register types of the contour are written. Examples of these register types will now be given.

7.1.1 The following examples are of different registers occurring over the same segmental phone sequence. All examples are from texts of connected speech as are all my examples in this paper. The examples for any given pair were but for one example never from different texts, but from the same text. There is only one example of pairs from different texts, 2, 2a; but the informant was the same and the register contrast was so prominent it didn't matter. The rest of the pairs, from the same texts, are either from the same page as I transcribed it or not more than three pages apart. HR, LR, NR explain themselves phonetically. A HR is pitched higher than either a LR or NR, either over the same or different sequence of segmental phones. Changes of register in these sequences usually can be heard fairly easily. A falling low, FL, contour has the general pitch of LR during a fall of pitch throughout the contour to pause. This contour though, always ends in $/ \rlap{/} \rlap{/} /$. The relative pitches in a FL are relatively lower than in N, H, or normal fall, (NF). In NF the general pitch of the contour is N during a fall to $/\psi/$. Like LF, NF always ends in $/\sqrt{}$. In NF, the relative pitches can be the same as in a N contour except toward the end of the contour where they are characteristically lower. However, even in non-falling contours there is a perceptive de-acceleration and lowering of pitch as the utterance nears a pause with low, not high, pitch. But this lowering is within the range of the contour, i.e., in a HR or other non-falling contours, the pitch falls within that register and only falls two to three syllables before low pitch and pause. While in NF and LF, the fall is heard throughout the contour to pause. Therefore, this fall in HR etc. is really a feature of pause and not of the contour, as it is in LF and NF.

1: HR [3 kmm mw lngwi m ma ?akutà 1k 3] what do you want to do that

l: HR [3 kam mwlnawi m mə akatə lk 3] what do you want to do that for, she said? JI, p. 2; la: LR [3 kam wlnawi m mə akatə 3] what do you want to do that for? JI, p. 2. (These are repetitions of the same sequence on the same page.)

2: <u>LR</u> [3 ya?pɛnkyū· lm+liclk 3] he is alive, they said, JI, p.3;

2a: <u>HR</u> [3 θln+əslta 1 HR ya?pɛ́:nkyūmɔ̃y 3] he was the only one alive,

JII, p. 5.

There are some features that are different in some occurrences of HR and LR but they are not patterned and therefore cannot be said to condition the occurrences of HR or LR, here. For example, in 2a, 1 pause occurs with HR and in 2.,3 pause occurs with LR. However, 3 pause occurs with LR in 1a and HR may occur with 2 pause. Therefore, degrees of pause cannot be said to be related to the occurrences of these register contours, H, L or any other. For examples of occurrences of different registers with different degrees of pause see other examples. Even from these four examples, segmental phones or the

number of syllables in the contour cannot condition the occurrence of these registers. The extent of the variability of degrees of pause and other features within any given register contour will become more evident with more examples: 3: HR [3 vélewí? 3] that s right JII, p. 4; 3a: LR [2 vélewí:KYUH] that is right, JII, p. 4; 3c: N [3 vélewíwő mi FL karkeKYU] he makes it right or wrong, JII, p. 6; 4a: HR [2 yîc há:nk+lNF ícokínyə nyuvwik ψ] they are fixing that, they said, DW2, p. 7; 4b: N [3 yîchá:nlk+lúclclk 3] they fix it and check it, DW2, p. 10; 5a: HR [H kávayú: iyúkayú: 3] I don't know, DWI, p. 5; 5b: LR [l kavvyúcikyúhiyú:h 3] I don't know, DWI, p. 8. (Pitch 1 here occurs with /-/ in 5b and LR. Also pitch 1 occurs with /// in NF in 4a.) 6a: HR [3 yaé:vlm y5:v 2] they made it themselves, S.R., p. 13; 6b: LR [2 tuyaé:vlm yɔ:v 2] they made it themselves, S.R., p. 13; (a repeated utterance.) 7a: <u>HR</u> [3 εατl mαnyəmæ·w nyαyûk 3] Earl's (dead) mother like that (i.e., dead), JIII, p. 4; 7b: LR [1 bánnyə táy nyayúk 1] my (dead) father like that, JII, p. 4; (These follow each other directly in the text.) 8a: HR [3 bánnyɔ wi:ham 3] my man (husband), JI, p. 1; 8b: HR [3 bánnyə witeyê:m l] my man, JI, p. l; 8c: NR [3 bánnyð wí? 2] my man, JI, p. 4; 9a: NF [2 to vám klná:vtm LFévi /] they just told me, I heard it, JIII, p. 1; 9b: NF [2 to vam klnavlm+evlnyu v] they just told me, I heard it, JI, p. 5; 9c: N [1 tu gwés klná:vcs évlnyu myúclk] I always heard

that story. It was told to me, JII, p. 6;

10a: [1 nyuk HR kuwé-kcamtav NR nyumnyıl pak tavın 1] It's real deep. I'll come over, Buff, p. 5; 10b: LR [nyuk kuwé·k tav FL kyúny mhá?h] it is real deep there, he said, Buff, p. 5; (These sequences follow one another directly in the text.) lla: LR [3 hée paye miyé wic 1] she pulled (all) her dress up high, Buff, p. 6; llb: NR [3 kwée hæ. miyæ.wc l] she pulled her dress up high, Buff, p. 7; 12a: NR [1 86. wwi+ny 1 FL 86. wwinye hà (almost a whisper)] she gave birth, she gave birth, there, JIII, p. 5. In these examples there are five examples of HR and LR contrasts with the same sequential phones: 1, 2, 5, 6, 7. In all of these examples there is no evident patterning of features which characterizes HR frames from LR, or vice-versa. Similarly, in other contrasts, there are also no evident patterning of features which would characterize LF from NF or L, except the distinctive pitches themselves.

In all of these examples, then, the particular registers are independent of any supra-segmental or segmental features that happen to occur in the contour (except LF and NF with W/). No particular degree of pause or stress seque nces are tied to any register. All degrees of pause occur with the different register types and so do all initial, medial and final stresses. Of course, since only two examples of NF were given, these

differences could be listed. However, differences for FL and N would have to be listed too, since they are all different, in different ways. Furthermore, only all the features differentiating NF and N, say, couldn't be listed and leave all the rest to LF since there still would be HR and LR to consider. Also when different registers occur in texts they don't always occur in sub-minimal pairs. Therefore all these non-minimal differences would have to be listed. It is apparent that in order to account for the differe nt registers these registers should be written. Because no actual grammatical function can be assigned them, in the sense of a fixed phoneme as this was defined in 1., since, as we see it the sub-minimal pairs, say, in 1, 2, 5, 6, 7, the substitution of one register type is not grammatically or lexically contrastive, these registers freely vary with one another as stylistic or expressive free phonemes.

In each pair of HR and LR contrasts the particular individual pitches are higher for HR than for LR. However, this rule can only apply to pairs such as these which occur in direct sequence, otherwise the sequence or levels of individual pitches that occur in a given register do not conform to any such rule when not occurring in sequence. They vary according to the level set in any given sequence. So that 3b(1), for example, is low compared to 3a(H), but has about the same individual pitch sequence as 4a, 6a(H). Similarly, 4b(N)

differences could be listed. However, differences for FL and N would have to be listed too, since they are all different, in different ways. Furthermore, only all the features differentiating NF and N, say, couldn't be listed and leave all the rest to LF since there still would be HR and LR to consider. Also when different registers occur in texts they don't always occur in sub-minimal pairs. Therefore all these non-minimal differences would have to be listed. It is apparent that in order to account for the differe nt registers these registers should be written. Because no actual grammatical function can be assigned them, in the sense of a fixed phoneme as this was defined in 1., since, as we see it the sub-minimal pairs, say, in 1, 2, 5, 6, 7, the substitution of one register type is not grammatically or lexically contrastive, these registers freely vary with one another as stylistic or expressive free phonemes.

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is lower than 3b, L , but has about the same pitch sequence as 6b, L . 3a, L , 3b, N , have about the same pitch sequences as 7a, H . 9b, NF, is about the same, in this respect, as 7b, L , and 9a, NF, about the same as 4a, H, and so on. There is no relation between the individual pitches and the registers, except for falling and /1/. What pitch sequences and registers co-occur, except those in direct sequence, are a matter of selection and cannot be accounted for by rule. The same may be said for the relation of stress to register type. In HR, [^] 1, 2; ['] 5a, 6; [~] 5b, lla occur on the initial syllable after pause. The initial 2 syllables in these sequences are [^'], [''], [''] respectively. (It will be shown in 7.2 that some occurrences of [^] are grammatically fixed, i.e., it occurs in sequences where there is no unpredictable variation, but also no minimal lexical contrasts of [^] with ['] or ['] occur in these environments. Such is the case here when [^] occurs in 1, 2, 4.) In these HR contours, then, [^], ['], ["] may contrast initially, disregarding the stress on the second syllable for the moment. Also in la, [^'] occurs in [CVC \ominus CSCV] and in 7a and 8a ['] occurs in the same sequence. In LR the same contrasts, except [], occur, see 1b, 11b. In NR [~] occurs in the sequence with [Θ] above in 8b and [$^{\sim}$] occurs in this sequence in 10. In 12b, ['] occurs initially in an open syllable and in 9c ['] occurs initially, both in a NR. In FL, ['] occurs

initially in 10, and in 11b ['] occurs initially, in the same [CVC \(\circ \CSCV \)]. 3c, in FL, ['] occurs initially but in a CVV.

In NF in 9a, 9b both sequences begin in ['] but in 4a ['] occurs. If we assume that [^] is fixed in all its occurrences here, with regard to just the register type, at least one stress would have to be written initially here. Furthermore there is the hint here that, in just the examples given, at least 2 stresses would have to be written since in LR in 11b [^] occurs initially but in 1 and 2, in LR, ['] occur initially. Also there is much pitch variation here. Compare the pitches with ['] in 3a, 4a, 11a and HR, and with [^] in NR in 4b, 10 and in LR the second syllables in 1b and 2a.

Finally in the contour in HR [~ ^] 2b, [~ '] la, [~ '] 8a, may occur. In la, 8a the penult is preceded by a [~] and in 2b by [']. In 2a, LR, the last four syllables are [~ ' ~ '] while the last four in lb, LR, are [~ ' ~]. Also the pitches here vary as much as they do initially. Even toward contour final, where the pitch may be progressively lowered, different degrees of stress may occur with the same pitch levels. Compare III in 5b and lb and LR, and in 2a pitch 2 occurs with ['] and [^]. Except for contrasts of [^ ~] and [^] in llb and l, 2 respectively, one stress could be written initially by these examples. But in final position at least two would have to be written, by these examples. Fitch nor length may condition any of these stress contrasts finally or initially. All lengthened

initially in 10, and in llb ['] occurs initially, in the same [CVC \(\circ \CSCV \)]. 3c, in FL, ['] occurs initially but in a CVV.

In NF in 9a, 9b both sequences begin in ['] but in 4a ['] occurs. If we assume that [^] is fixed in all its occurrences here, with regard to just the register type, at least one stress would have to be written initially here. Furthermore there is the hint here that, in just the examples given, at least 2 stresses would have to be written since in IR in llb [^~] occurs initially but in 1 and 2, in LR, ['] occur initially. Also there is much pitch variation here. Compare the pitches with ['] in 3a, 4a, lla and HR, and with [^] in NR in 4b, 10 and in LR the second syllables in lb and 2a.

Finally in the contour in HR [~~] 2b, [~~] la, [~~] 8a, may occur. In la, 8a the penult is preceded by a [~] and in 2b by [~]. In 2a, LR, the last four syllables are [~~~~] while the last four in lb, LR, are [~~~~]. Also the pitches here vary as much as they do initially. Even toward contour final, where the pitch may be progressively lowered, different degrees of stress may occur with the same pitch levels. Compare III in 5b and lb and LR, and in 2a pitch 2 occurs with [~] and [~]. Except for contrasts of [~~~] and [~~] in llb and l, 2 respectively, one stress could be written initially by these examples. But in final position at least two would have to be written, by these examples. Fitch nor length may condition any of these stress contrasts finally or initially. All lengthened

Vs occur only with ['] in citation but not in connected speech where unstressed Vs may occur lengthened in free variation.

But unlengthened Vs may occur with ['] [^] or [']. In any case only one example of a lengthened [V] occurs here, in 2b.

Therefore, as far as these examples are concerned, it has been shown that three degrees of stress [^], ['] and ['] are independent of each other, of the register of the contour, pitch and length. In section 8 the relation of length, stress and pitch to contour boundary markers will be discussed in more detail.

7.2 In 7.2-7.3, 55 examples are given to show that the contrasts of /^, , // are not conditioned. All the possible conditioning factors are discussed. Two examples of the same stress occurrence on the same morpheme are given to suggest, that except for morphophonemic rules, the stress is fixed.

The following examples are occurrences of [^], initially and medially and finally. In the corpus, [^], did not freely wary with ['] or ['] in these occurrences. These pairs are all repetitions of [^] occurring with the same segmental phone sequence. In these examples, it will be shown that [^] cannot be predicted allophon/cally, and may contrast with ['] and ['] in these occurrences. All registers but NR will be marked.

la: [l mat+hay l] damp ground, 7C, p. l; lb: [l mat+silé.lk l]
they plow up the ground, DWII, p. 4; 2a: [l tu katstel [wa-yo-m 3]

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we were riding just in wagons, DWI, p. 13; 2b:
[1 katstel panya puim 3] they put all of us in wagons, DWI,
p. 10; 3b: [1 ca:m tavc.k+(moic.k 3] I made a mistake, he said,
BS, p. 16; 3c: [l nyuvyúc yévvím wi:cik 3 mác 3] they have that
kind, but we don't, B.S., p. 21; 3d: [1 k2keweelke 1] name of
a place, L.S., p. 6; 3e: [3 katel pal 1] name of a place,
L.S., p. 16; (In 3d, e, [k3] means pinion tree.)
4a: [1 pa ciyamcım 1] they sent all of them, B.S., p. 6;
4b: [3 kwéa pa wiwok] he showed them something, B.S., p. 3;
4c: [2 tu pa ti·k 2] they got them together, Buff, p. 32;
5a: [1 tât há:t 3] I went to work, L.S., P. 12;
5b: [3 Pheonix 1 hal tat ha: ta: 1] L.S., p. 12, I went to work
there in Phoenix, L.S., p. 12;
6a: [3 yak ps. t.k 1] he was drunk, P.W., p. 7;
6b: [yakpé·ţik 1] he was drunk, P.W., p. 7;
6c: [1 ya?psk 2] he was living there, L.S., p. 7;
7a: [3 wi:hakinpacil 2] Flagstaff, P.W., p. 1;
7b: [3 wi hak npacil 1] Flagstaff, P.W., p. 2;
8a: [1 vâm ya:c 3] they are going past here, F.W., p. 2;
8b: [1 vam ya cmik 1] they are going past here, P.W., p. 2;
9a: [3 walpaym 3] Walapai, JII, p. 2;
9b: [2 walpayam 1] Walapai, J12, p. 4;
9c: [3 walpa:yv 1] Walapai, P.D.L.S., p. 6;
10a: [3 pan kitayv 3] the old people, P.D., p. 1;
10b: [1 pan kitaywo 3] the old people, P.D., p. 2;
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lla: [1 gak han tava təo:p 3] it's not good, B.S., p. 6;
11b: [2 taytav 1] big ones, B.S., p. 36;
12a: [3 kak hayku:v 1] before the white man, S.R., p. 1;
12b: [1 kak spá taú:m yíť 2] I don't know but, P.D., p. 7;
13a: [3 (±?) iwil 1 vasuma.v 3] they eat the green grass, B.S.,
p. 1; 13b: [3 (\pm?) iw l 1] weeds or grass, B.S., p. 8;
14a: [3 cod HR kávalawím 1 wímo nychák 3] how old was I then?
DEI, p. 9; 14b: [1 cfd 1 hale Ouyul 1 halmat 3] maybe I was nine
years old, DVI, p. 9; 15a: [2 kwaetat 1] barbed wire, S.R., p. 9;
15b: [2 ham kwatatev 1] (they put) borbed wire there, S.R., p. 9;
15c: [3 kwaksevti:k 2] wire fence, D/I, p. 2;
16a: [1 váko há:mciyít 3] I used to live around here, L.S., p. 10;
16b: [2 spoy(t 3] I know it, F.V., p. 8;
17a: [3 tù tovto vtim myúc 3] I always get tired, L.S., p. 15;
17b: [l kak tov+5:v+aic, tek 3] I never used to get tired, L.S.,
v. 12; 18a: LR [3 gân mahâymkúnya l] before you white people,
S.R., p. 18; 18b: [1 gak mahaymkunya 1] before you white people,
S.R., p. 19; 19a: [3 banya nya howek 3] Theonix, IC, p. 3;
19b: [banyanyaha wa ytik 3] when I lived in Phoenix, IC, p. 3;
(In 19a, b, [ba] means man)
2Ca: [3 vələwiwo 1] they do it the right way, H-S., p. 5, planting
20b: [3 vələwiwoml 1 FL kackeKYU 3] he makes it right or wrong,
JII, p. 111; 21a: [3 sū: macincim 1] watermelon, F.D.H.S., p. 2;
21b: [1 sumacev 1] watermelon, P.D.L.S., p. 2;
22a: [2 kwee kawiwocomwic 2] they made her do it, 8C, p. 1;
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lla: [l gâk han tâva tə\acute{o}:p 3] it's not good, B.S., p. 6;
11b: [2 táytav 1] big ones, B.S., p. 36;
12a: [3 kak hayku:v 1] before the white man, S.R., p. 1;
12b: [1 kâk spố taú:m yít 2] I don't know but, P.D., p. 7;
13a: [3 (±?) iwil 1 vasuma.v 3] they eat the green grass, B.S.,
p. 1; 13b: [3 (\pm?)^{1/2} iw 1] weeds or grass, B.S., p. 8;
14a: [3 cod HR kavalawim 1 wimo nychak 3] how old was I then?
DWI, p. 9; 14b: [1 cfd l hala Dúyul l halmát 3] maybe I was nine
years old, DWI, p. 9; 15a: [2 kwaetat 1] barbed wire, S.R., p. 9;
15b: [2 ham kwatatev 1] (they put) barbed wire there, S.R., p. 9;
15c: [3 kwaksevti:k 2] wire fence, DWI, p. 2;
16a: [1 váka há:mciyít 3] I used to live around here, L.S., p. 10;
16b: [2 spoyît 3] I know it, P.W., p. 8;
17a: [3 tù tôv to v tim myúc 3] I always get tired, L.S., p. 15;
17b: [1 kak tov+5:v+aic, tok 3] I never used to get tired, L.S.,
p. 12; 18a: LR [3 gân mahâymkûnyə 1] before you white people,
S.R., p. 18; 18b: [1 gak mahaymkunyə 1] before you white people,
S.R., p. 19; 19a: [3 banya nya hawak 3] Pheonix, IC, p. 3;
19b: [banyanyahe wa ytik 3] when I lived in Phoenix, IC, p. 3;
(In 19a, b, [ba] means man)
20a: [3 vələwiwo 1] they do it the right way, H-S., p. 5, planting
20b: [3 vələwiwomi l FL kackeKYU 3] he makes it right or wrong,
JII, p. 111; 21a: [3 sū: macincim 1] watermelon, P.D.H.S., p. 2;
21b: [1 sûmacev 1] watermelon, P.D.L.S., p. 2;
22a: [2 kwée kawiwôcomwic 2] they made her do it, 8C, p. 1;
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22b: [2 tu kwée pánye wiwóco távím mwic 3] they really made her do it, B.S., p. 8;

23a: [3 wampocuwoko 2] Grand Canyon, DWI, p. 1;

23b: [2 cuwokov 1] Grand Canyon, L.S., p. 3;

In examples, 21a, 7a, 9c, [û:], [î:] and [â:] occurs, while in 21b, 7b and 9b and 9a these same vowels under the same stresses are short. The [î:] [î] variation in 7a and 7b is of particular interest since the sequence [wi] always occurs short in citation. These length variations will be exemplified further in 7.3.

Assuming, then, that the occurrences of [^] here are fixed, in order to predict [^] initially in the contour, the following rules would have to be formulated. In the pairs, all, except two, initial closed syllables are [^]. Some initial open syllables with [a, i, u] occur with [^] and all initial open syllables with [o, u:, i:] occur with [^].

Initial closed syllables, include examples 1, 3b, 5a, 6, 8, 9, 10, 11a, 12, 14, 15. Initial open syllables include examples 3d, e, 4a, 7, 19, 2l. Exceptions to [^] occurring initially in an open syllable are examples 2b, 16a where [a] occurs, 13 where [i] occurs, 22a where [e] occurs, 20 where [a] occurs and 22b, 17a, 4c, 2a, 3c where [u~u] occurs and lastly, 16b where [5] occurs. [5] sub-minimally contrasts with [5] in 16b and 3d,e respectively and [a] sub-minimally with [â] in 2b, 16a and 4e respectively. [u] in 3c, 2a etc.

contrasts sub-minimally with [û] in 21 and, lastly [i] in 13 contrasts sub-minimally with [î] in 7. There are no such contrasts for other [V] here. In initial closed syllables, [â], in 11b and 23a, contrasts sub-minimally with [â] in 12 and others. However there may be other occurrences of [á] initially in a closed syllable:

24a: [l yamnyık 3] going, Buff, p. 2;

24b: [3 malkem ticinyum+teim 3] he turned into a rat, Buff, p. 11; 24c: [1 hancem myúcokinyenyúk 3] that is why it was always good, S.R., p. 3; 24d: [1 waksi témnychátic 2] they own lots of cattle, S.R., p. 10; 24e: [1 tá:tvék 3] they were laying there, Buff, p. 13.

After all the initial [V] in 24a-e, [V] occurs. But in 1b, 10, 12a, 15c the [V] also occurs immediately after initial [V]; and in others it is [V]. Therefore [V] both subminimally contrast after [V] and also [V] cannot be predicted initially by knowing the stress of the second syllable since [V] and [V] contrast before [V].

Only 7 examples were given here of ['] occurring in initial closed syllables. In order to predict [^], then, just from this corpus, the rules would only have to account for these 7 examples — 24a-e, 1lb, 23a. No initial closed syllable occurring with [^] is lengthened so 24e where [v:] occurs covers one rule. Now since occurrence in syllable type, contour position and also in quality of vowel (most occur as

contrasts sub-minimally with $[\hat{\mathbf{u}}]$ in 21 and, lastly $[\hat{\mathbf{i}}]$ in 13 contrasts sub-minimally with $[\hat{\mathbf{i}}]$ in 7. There are no such contrasts for other $[\hat{V}]$ here. In initial closed syllables, $[\hat{\mathbf{a}}]$, in 11b and 23a, contrasts sub-minimally with $[\hat{\mathbf{a}}]$ in 12 and others. However there may be other occurrences of $[\hat{\mathbf{a}}]$ initially in a closed syllable:

24a: [l yámny k 3] going, Buff, p. 2;

24b: [3 malkem ticinyum+(0im 3] he turned into a rat, Buff, p. 11; 24c: [1 hancem myúcokényenyúk 3] that is why it was always good, S.R., p. 3; 24d: [1 waksi témnychátic 2] they own lots of cattle, S.R., p. 10; 24e: [1 tá:tvék 3] they were laying there, Buff, p. 13.

After all the initial [V] in 24a-e, [V] occurs. But in 1b, 10, 12a, 15c the [V] also occurs immediately after initial [V]; and in others it is [V]. Therefore [V] [V] both subminimally contrast after [V] and also [V] cannot be predicted initially by knowing the stress of the second syllable since [V] and [V] contrast before [V].

Only 7 examples were given here of ['] occurring in initial closed syllables. In order to predict [^], then, just from this corpus, the rules would only have to account for these 7 examples — 24a-e, llb, 23a. No initial closed syllable occurring with [^] is lengthened so 24e where [V:] occurs covers one rule. Now since occurrence in syllable type, contour position and also in quality of vowel (most occur as

 $[\hat{a}]$ and $[\hat{a}]$ are similar, the only other possible conditioning factors, other than pitch or pause, which also contrast on [^] or ['], (anyway, I think it has been shown that pitch and pause vary too much to be dependable for rule formation), would be the segmental phones. Furthermore in at least five of these cases, both phones flanking the V would have to be listed. In 6, 9, 10, 5 where [a] occurs, [t, y, p, w] occur initially and [n] may occur as a coda. In 24a, b, c, llb where [a] occurs, [y, w] occur initially in 24a and 23a and in llb [y] occurs as a coda. In 24c [n] may occur as a coda. Therefore at least t-y (or some other rule regarding length in 24e, y-m, h-n for [a] would have to be listed, and to account for [w] before [á] and [â] at least a rule that [â] occurs in w-1, 9. Also to account for [\hat{a}] in 24b and [\hat{a}] in 1., m-t or m-l would be listed. In order to account for all the occurrences of [^], then, with just these 7 occurrences of ['] in initial closed syllables, at least 7 rules would have to be formulated of which 6 involved at least 2 phones each rule.

In initial open syllables, the initial segmental phone would have to be listed before [^] or ['] to account for [a] [a], [5] [5], [i] [i], [u] [u]. (See page 88 ff for example numbers.) To account for these contrasts at least 4 more rules covering the 4 cases of [V] here in an initial open syllable would have to be listed: [V] occurs after sp, k, ?, and [V]

after [s], since [u] occurs after both [t] and [ny]. Also, since ['] and [^] contrast in initial open syllables, the vowels which only occur with ['] would have to be listed:
[é] 22a, [á] 20. This makes 6 rules for occurrences of [^] in initial open syllables. This then makes a total of 13 involved rules so far to account for [^] in just this corpus.

In these examples, medially in the contour in closed syllables, lengthened syllables only occur with $\acute{ extsf{v}}$, but unlengthened syllables may occur with \mathring{V} or \mathring{V} or \mathring{V} . Unlengthened \mathring{V} occur in only four examples: 2b, 5b, 17b, 18. Examples 2b, 5b, 17b all begin with [t] but so does 3b where [V] occurs and since 3b is [tav] and 17b [tav+1], either one of the vowels or [+1] would have to be listed. If just the sequence [tiy] was listed as occurring only with $[\mathring{V}]$ all the examples of [t] initial where [^] occurred would be accounted for: 2b, 5b. This leaves only 18. $[\tilde{V}]$ occurs with the same onset and coda, h-y, in 12a and [V] occurs with the same onset in 11a. Therefore to account for both these contrasts [h-ym] for 18 would have to be listed. These 3 complex rules would account for [^] in medial closed syllables. (['] and [~] contrast, here, and in other positions already discussed. I am not bothering with these here. [] and [^] also contrasted in initial open syllables. All of these will be discussed further in 7.5.) In open syllables medial in the contour there are many contrasts of [^] and ['] and at least one segmental phone would have to be listed to account for [^]. This would add

3 more rules for [^] in 4b, 3b, 20, and in 23 and 20 [wo] and [wo] contrast and the whole environment would have to be listed.

To account for [^], then in initial and medial closed and open syllables in just these e xamples, 19 rules, at least, would have to be formulated. These rules concern mostly [^] and ['] contrasts, but since ['] occurs in all of these environments a large number of rules (probably on an average of one rule per occurrence of [^] here—about the same as in contrasts with [']) would be needed to account for [^] from ['], or vice versa; so that [^] and ['] couldn't be grouped together. These examples and the examples in 5.7 show that ['] and ['] could not be grouped together for the same reasons. There are no general and simple rules which could account for any of these stresses with one of them as a norm. Length has nothing to do with these contrasts at all. Length and stress are two independent systems in Havasupai. There is no need to examine contrasts in final position.

Some occurrences of [^] here are due to compounding. The first syllables in 1, 3d, e, 7, 15a,c, are all initial syllables of compounds. However, this morphological information is of no more use than the phonetic information in accounting for [^] since we have seen that [^] since we have seen that [^] occurs initially on syllables not compounds. Therefore in order to differentiate these at the outset, so as

3 more rules for [^] in 4b, 3b, 20, and in 23 and 20 [wo] and [wo] contrast and the whole environment would have to be listed.

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Some occurrences of [$^{\land}$] here are due to compounding. The first syllables in 1, 3d, e, 7, 15a,c, are all initial syllables of compounds. However, this morphological information is of no more use than the phonetic information in accounting for [$^{\land}$] since we have seen that [$^{\land}$] since we have seen that [$^{\land}$] occurs initially on syllables not compounds. Therefore in order to differentiate these at the outset, so as

to formulate a rule that [^] always occurs initially in compounds, compounds would then have to be marked anyway.

There are some shifts here of [^] to ['] which are morphologically conditioned. Why the morphologically conditioned shifts are morphophonemic and not allophonic has just been explained in the case of compounding. In 4a, [l pâ] occurs as a goal and as a goal it is always [pâ]. When it isn't a goal it is [pâ]. Compare 4a with [l pâketâvem l] I'd really come out, Buff., p. 4. Here [pâ] is the initial syllable of a stem. Both environments are stressed similarly: 4a is CŶCŸ and this example is CÝCŸ ([ə]~[Ÿ]).

The shift $[t\hat{\mathbf{a}}v]$ to $[t\hat{\mathbf{a}}va]$ in llb and lla respectively, is also morphologically conditioned, since it has been shown here that $[\hat{V}V]$ occurs medially. Therefore the morpheme is $[t\hat{\mathbf{a}}v]$ intensifier as a closed syllable but $[t\hat{\mathbf{a}}va]$ as an open syllable.

These examples show that [*], ['] and ["] need to be written as far as what has been discussed up to now is concerned. In these examples [*] may freely vary with [`] but it never gets as high as ['] or as low as ["], except for the rules just given. That [*] ['] are grammatically distinct is therefore proven. I mean by grammatical here that certain sequences, and the language as a whole, have certain fixed stress sequences, except for morphophonemic rules, peculiar to the sequences and characteristic of the language such that any change in this pattern will sound unusual or foreign to a

native speaker. For example if 4a were written *[pdciyamcim] this would be heard, to a native speaker of Havasupai, as [remember] in English would sound to a native speaker of English if it was written [rémembér]. This is what I mean by saying [] [^] and [^] are grammatically distinct in Havasupai. There are no minimal pairs that attest their distinctness.

The examples 1-23 and 24a-e and others in 3. and 4. show that all segmental phonemic norms may occur under ['] and all except [5] may occur under ['] ([5] occurs after [+1] in 3. and 4.) All norms except [i], [ϵ] and [ϵ] occur under [\hat{V}]. The allophones of these norms do not occur with [\hat{V}] either. The occurrences of norms lengthened and unlengthened in texts and the relationship of length and stress will now be discussed.

7.3 In 7.3 -7.6, contrasts of length are given and all the possible conditioning factors for length are described. There are two or three examples given for each contrast to show that one morpheme never always has occurred with length. For example [awideo] in la.

Except for free variations and morphophonemic changes, this morpheme never occurred with length in citation or connected speech. It is also suggested, in this section, that phonemes from minimal pairs in citation are useless since in connected speech the informational load carried always by one phoneme in citation may be carried by another in connected speech. In 7.5.1 three types of free variation found in the corpus will be discussed.

In this section length contrasts, within the contour, of all the phonemic norms except [s] and [s] will be given. [e] and [æ], allophones

native speaker. For example if 4a were written *[pcciyamcim] this would be heard, to a native speaker of Havasupai, as [remember] in English would sound to a native speaker of English if it was written [rémembér]. This is what I mean by saying [/ [^] and ['] are grammatically distinct in Havasupai. There are no minimal pairs that attest their distinctness.

The examples 1-23 and 24a-e and others in 3. and 4. show that all segmental phonemic norms may occur under ['] and all except [5] may occur under ['] ([5] occurs after [+1] in 3. and 4.) All norms except [i], [s] and [a] occur under [\hat{V}]. The allophones of these norms do not occur with [^] either. The occurrences of norms lengthened and unlengthened in texts and the relationship of length and stress will now be discussed.

7.3 In 7.3-7.6, contrasts of length are given and all the possible conditioning factors for length are described. There are two or three examples given for each contrast to show that one morpheme Never of always has occurred with length. For example [awideo] in la.

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In this section length contrasts, within the contour, of all the phonemic norms except [s] and [a] will be given. [e] and [ae], allophones

[ε] and [ə] respectively, occur lengthened more frequently than the norms.
 [δ] is never lengthened. Therefore 6./6 and 26./5 contrasts will be given.

In 7.6.1, examples will be given to show that in citation, utterances which occurred or did not occur with length in minimal pairs or not in minimal pairs, may or may not occur so in connected speech. This is primarily due to the amount of free variation in connected speech. Therefore, without the citation form in a minimal pair, the phonemic status of length in a given utterance would be questionable.

The following are lengthened-unlengthened contrasts for all the phonemic norms. There are four examples of short and four examples of long for each vowel with two, or sometimes three, instances of each example. This is to show that although there may be some unaccountable variation of length in some utterances (see 7.6.1), in others, like the occurrences of ['] ['] and ['] in the preceding section, the occurrences of long and short vowels are fixed, except for morphophonic variations.

All contrasts of $[\mathring{\mathbf{V}}]$ and $[\mathring{\mathbf{V}}]$ are medial in the contour.

[i] - [i]: (The particular occurrence will be underlined.)

[i], la: [1 wico gwideo: 2] they used to do that, J12, p. 2;

lb: [1 mwi:c kwiceo l] they used to do that, B.S., p. 5;

lc: [1 ke. yokicim mwi.c gwideo va.m.] they used to come and get it

but now..., 4C, p. 6;

2a: [va:m+o:pclk gak gwenya wice teu.m l] they don't do that anymore,

J9, p. 2;

2b: [2 ka wica taom mwictem] before they always did that, P.W., p. 4;

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3a: HR [3 pinn pinn LR tava l yitəm l] they almost died too, JI, p. 2;
3b: [1 piθ cáto kinyəh 2] she almost died, JII, p. 1;
4a: [2 kúviyám l haskwihəm 2] he stood on the other side, Buff, p. 4;
4b: [2 kak pa kyaé clm skwik 3] they are not standing and shooting,
Buff, p. 10;
[i']: (or [i:]; [V:] or more is expressive)
5a: [z tèν θi:n+lmwiiclm 3] I'm always drinking, CA, p. 10;
5b: [l hak gwés bi:táva l] I don t get drunk, PW, p. l;
5c: [1 há: v hi k 2] they are drinking water, SR., p. 7; [θ~h];
6a: [3 wasi:v 2] she was thinking, Buff, p. 8;
6b: [2 yaé·vlm wasi·vlk + é:vlk két ə patá:y ] theck people think
for themselves, S.R., p. 16;
7a: [1 hal wanye haykumelve awi clm 3] we have an agent of the govern-
ment who lives here, B.S., p. 4;
7b: [3 kwányə wi:wocámo wime 3] I forgot my knife, Buff, p.3;
(Note the contrast of [wi:] in 7a, 7b and [wi] in 2a, 2b. This contrast
also occurs in citation.)
8a: [3 qwake nyemi:nye 2] deer skin, J13, p. 1;
8b: [3 nylmi:atch 3] his skin, Buff, p. 34;
        [á] - [á·]: [á], 9a: [l tùkwé:?l kwéakicqácacú:k3]
beginning from the smallest, Buff, p. 12;
9b: [3 kwamkwanye 2 qaca hwako 3] two little (ones), 9C, p. 8;
10a: [3 kwés qwák 2] deer, IC, p. 4;
 10b: [3 qwáknyl næ wckk l] when they killed the deer, 7C, p. l;
 lla: [1 somác¢v mam 1] ripe watermelon, P.D., p. 2;
 llb: [2 yúkθο sumác lny l məlú:nln l tu mát lm LR mamám cá·vcá·v 3]
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but you eat watermelon and canteloupe right when they are ripe so you can get rid of them real fast, 6C, p. 11; 12a: [2 tu makll 1 makll viya:m l] they sneak up on you from the back, P.W., p. 9; 12b: [3 makll nemá:nylm 2] when its cooked on the botton, 9C, p. 6; [6.], 13a: [3 tenmá:kg v 2] they race, P.D., p. 2; 13b: [1 ka?5.t lvin tenma:klcim]] they were turned loose and raced away, S.R., p. 5; 14a: [3 túc¢v 2 cèv HR yəhá: mất lm meyúm 2] the water was a little muddy, Buff, p. 5; 14b: [1 há:v hí:k 2] they were drinking water, S.R., p. 7; 15a: [1 wényami: ca l icol mé:t] I think they mean hair on the body, Buff, p. 14; 15b: [1 va:clm 1 milcə halma•t 3] I think that's what they mean, Buff, p. 27; (Note the contrast of [má·] in 13a, 15 and [má] in 11, 12.) 16a: [3 0əpál ká yny 1] there are different kinds of peaches, 6C, p. 2. 16b: [1 nyuká:ym 1] in different places, DWI, p. 1 [é] - [é]: [é], 17a: [] təɔ̃lvə clphé l] it covered the sweat-house, Buff, p. 34; 17b: [1 clpek? 1] they covered it, Buff, p. 3; 18a: [1 pa tahmec lm wi cke)] they cured people, JIII, p. 8; 18b: [3 hmeoklnya l] they got cured, JIII, p. 6; 19a: [3 th kwés ciyá:v 1] I ordered something, C.A., p. 9; 19b: [2 kwes tlnyút+ú:col 3] we went to school, B.S., p. 1; 20a: [] nyatéwok 3] there is a lot of it, 9C, p. 7; 20b: [1 gwée hwd: 1 1 tlpewi cok H] they plant a lot, J12, p. 3;

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[é.], 21a: [2 paqí 1 kyé:k 1] a strong woman, 8C, p. 8;
21b: [2 klke:hlkyûll] they will be strong, 8C, p. 10;
21c: [3 klké·k 3] it's strong, J7, p. 5;
22a: [1 pakiyo:va: 1 tope clk 1] they believe in the creator, JI, p. 7;
22b: [1 kweə gav +i 1 tope:clk 1] they believe what he says, J5, p. 7;
(Note the contrast of [pé] in 17 and [pé·] in 22.)
23a: [2 nyl qé:cim 1] a little bit, LS, p. 8;
2) b: [2 qé·ctəm 2] when I was small, LS, p. l;
24a: [2 nyûk kuwé k + ú:vlm l] you can see where its deep, Buff, p. 5;
24b: LR [1 nyuk kuwé k tav FL kyúnyum hà?h ] right there it's very
deep he said, Buff. p. 6;
       [ú] - [ú·]: [ú], 25a: [3 nylhác mákə yókl-yúcθo 3] it used to
be in the back, S.R., p. 8;
25b: [3 θαν yúk hak kyó:k yúcθο 3] that's the way it happened before,
S.R., p. 9;
26a: [3 kavyúk + Îmôy yúk 3] something happened, Buff, p. 9;
26b: (see 25b);
27a: [3 havasúw31 paca 1] the people in Supai, 5C, p. 2;
 27b: [1 havasúwi pa:v edl wamk 1] a Supai man takes it down there,
 4C, p. 6;
 28a: [túnyə nyuvyúc 2] just the same way, DWI, p. 7;
 28b: [3 nyuvyú 1] that's the thing, B.S., p. 19;
        [ú:], 29a: [2 tù paú:k 3] just watch people, P.W., p. 1;
 29b: [2 tlnyút+ú:clm myú:clk 2] they always went to school, B.S., p. 3;
 30a: [ 3515v va 11v 1] they rode horses, P.W., p. 1;
 30b: [2 th 24:14v 2] they just rode, P.W., p. 2;
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31a: [3 hαyakú:cə icilm] like the white man said, B.S., p. 17;
31b: [2 hαykú·v yɔ́:clm l] the white man's got it, CA, p. 2;
31c: [1 yúkθο hαykúːivlm 2] but the white man says it, PW, p. 8;
32a: [2 kê yúːci] where did you come from? Buff, p. 27;
32b: [1 kiyú: lnyaé topo 1 kiyú·c kữ lk] what are they called that come from the east? P.W., p. 7;

[5] - [26.]: [5] never occurs lengthened. It may though occur fixed and free under [7].

[é], (é-a), 33 a: [l pa:y kélewik l] they mix all of it, PD, p. 6;
33 b: [nyl kálawić mičtk l] when they ve finished mixing, 5C, p. 2;
34a: (In this example, I have no instances of [é] varying with [á] or
any other vowel.) [3 túc¢v vélewim yæé m 2] they go any time B.S.,
p. 1;

34b: HR [3 ψ ψ 3] this is right. JI, p. 1.

I will give 4 examples of [æ·] to show that [æ·] is in complementary distribution with [á] with regard to length, but contrasts by length with the other examples given here.

[æ], Ĵ5a: [l gwae·wca kwiclk +lmɔy l] I don't know what they talk about, Buff, p. 4;

3 5b: [2 gwae wcat 2] they don't talk, Buff, p. 3 7;

36a: [1 kakae:k 3] they went across, CA, p. 2;

36b: [1 ham yaé klma ham nyakaé m 2] then, he crossed there, Buff, p. 2;

37a: LR [1 tu yaé:vlm yɔ̃:v] they made it themselves, S.R., p. 13;

) 7b: [3tu yaé vm 2] just yourself, L.S., p. 9;

J8a: [3 kwés klhætticækiny 3] the ones who will rope, P.W., p. 3;

38b: [3 kwe mahae: t lnyîk 2] if you are going to rope, P.W., p. 10;

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[5] - [5]; [5], 39a: [3 ham tu coque 3] where the juniper tree
is, S.R., p. 7;
39b: [2 kak kwake wice tas tlm coqem tîtkyæ tuv l] before they cut
the juniper tree they didn't have knives, S.R., p. 5;
40a: [2 nyúva cuwókôv 2] they came here to Grand Canyon, L.S., p. 21;
40b: [2 vak cuwokovvak pany l kamyúclk 3] they brought them all to
Grand Canyon, DWI, p. 4;
4la: LR [1 ham nyényəmžt ac 1 pikyûl iclm +iclk 3] my grandmother
almost died they said, JII, p. 2;
41b: LR [1 ny lm ha yény mot ac l] at that time my (dead) grandmother...,
JII, p.3;
42a: [tiəpæ·k səvkɔclm l] he closed the fence, S.R., p. 4;
42b: [3 isəkoy scae nyə l] fence posts, DWI, p. 2;
42c: [2 iskoya 3] wooden fence, S.R., p. 5;
        [5.], 43a: [2 y5:clm 1] they got it, CA, p. 2;
43b: HR [3 yæ:v lmy5:v 2] they made it themselves, S.R., p. 13;
44a: [3 kə?5.t, lvav l viyú:clk 2] we came on top, L.S., p. 6;
44b: [2 515nc kə5:; lvln l tenmá:kiclm 3] they turned the horses loose
on top and they raced, S.R., p. 2;
45a: [2 pdy kávcs:q 2] they mix it all together, 9C, p. 3;
45b: [2 c5·qi 2] they mix it, 9C, p. 9;
45c: [2 nylc5:qev 3] when it's mixed, 9C, p. 3; (compare [c5·] here
 with [col in 39.)
 46a: [1 cány cuwó mlk 3] they put it on top, 7C, p. 6;
 46b: [3 cuwo:cl nyûk qwák 2] they put it on the deer, 7C, p. 2; (compare
 [w5.] here with [w5] in 40.)
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7.5 By these examples, $[\mathring{\mathbf{V}} \cdot]$ contrasts with $[\mathring{\mathbf{V}}]$ in open and closed syllables medially in the contour. Variations of long and short $[\mathring{\mathbf{V}}]$ finally in the contour will be given in 7.6. In that position, length is very variable. More fixed contrasts occur in contour medial, than contour final.

In most of the examples only $[\mathring{V}]$ were long but there were some examples where $[\mathring{V}]$ occur lengthened and in 7.5.1 some more examples of $[\mathring{V}\cdot]$ will be given. $[\mathring{V}\cdot]$ and $[\mathring{V}]$ contrasts are always stylistic. In the previous section $[\mathring{V}]$ occurred long and short, stylistically as did $[\mathring{V}]$. In citation only long $[\mathring{V}]$ occur with $[\mathring{\ }]$, but not all $[\mathring{V}]$ are long. In connected speech, though, as was shown here and will be shown in 7.5.1, long V may occur with $[\mathring{\ }]$ or $[\mathring{\ }]$.

Now by these examples it would be difficult to try to predict $[\mathring{\mathbf{V}}\cdot]$, or $[\mathring{\mathbf{V}}]$, or to group any of different vowels together, except $[\mathring{\mathbf{a}}\cdot]$ and $[\mathring{\mathbf{a}}]$, by length. Disregarding citation length for the moment, $([\mathring{}][\mathring{}][\mathring{}]$ minimal pairs did not occur in citation, but they exhibit the same type of fixedness and difficulty in prediction as does the long-short contrasts), the rules, just for this corpus, to account for long or short vowels, would be too complex and too numerous just as they were for $[\mathring{}][\mathring{}][\mathring{}]$.

The only possible conditioning factors would be the sequential phones. [5], by these examples, is the most restricted. It only occurs here in open syllables medially in the contour. But so does $[5\cdot]$; and $[5\cdot]$ occurs elsewhere, too. The rules for predicting length in [5] and $[5\cdot]$ would include: 1. all occurrences of length on [5] initially and finally are long. 2. in all occurrences of medial vowel

clusters where the second vowel is stressed it is also long. 3. In the sequences where long and short contrasts medially in an open syllable, the sequential phones would have to be listed: [cuwɔś-nlk] - [cuwɔkɔv], [cɔś-qəv] - [cɔqəm], and [səvkɔclm], [mɔśt aːś].

To account for [5] and [5] here at least 4 minimal rules would be needed and [5] is the most restricted of all the examples here. If then, at least 4 rules for each contrast were needed that would be a minimum of 20 rules for these contrasts. And that is a bare minimum. I counted at least 25. I'm not including them because I think it is fairly evident.

Also pitch levels vary so much on $[\mathring{\mathbf{V}}]$ and $[\mathring{\mathbf{V}}\cdot]$ that any combination of pitch and stress could not predict length nor, in fact could any combination of pitch and length predict stress.

Up to now, then, the corpus has shown that pitch, stress, $[\mathring{V}]$ and $[\mathring{V}]$, length, $[\mathring{V}\cdot]$, $[\mathring{V}]$, and registers, are independent systems: pitch and registers as free, and stress and length as fixed phonemes.

- 7.5.1 There are types of free variation with long-short vowels:
- 1. Utterances which in citation occurred long or short in minimal pairs may occur in connected speech short or long, respectively.
- 2. Unstressed [^] or [v] vowels which never occurred lengthened in citation occurred long in connected speech.
- 3. Stressed vowels which occurred short in citation and for which there were no minimal pairs in citation occurred long or short in connected speech.

It should be noted that none of these variations are features of contour boundaries. This will be taken up in 7.6.

The contrast (a.) [wi·kə] to own something, and (b.) [wikə] to do occurs in citation. Both of these morphemes occur both long and short in connected speech.

47a: (b) [1 páyənyuwiticík 3] when they are all finished, H.S.P.D., p. 9;

47b: (b) [3 pdyənyuwi:tlclk3] when they are all finished, H.S.P.D., p. 9;

(These are repetitions of the same sequence.)

48a: (b) [1 wica l] they do it, JIII, p. 2;

48b: (b) [1 wi:ca] they do it, JII, p. 2;

48c: (b) $[^3 \text{ wi:ce}]$ they do it, P.W., p. 10;

50a: (a) [] wú?mupæswicuv 3] the Navahos have money, B.S., p. 2;

50b: (a) [2 gweeviyamkavayaclmnydwi:clk 3] if some of them own a car,

P.W., p. 5;

5la: (a) [2 hmá·nyə l têmwi:təm 2] he had many children, JII, p.3;

51b: (a) HR [] bunyawitzys:m 1] my man himself, JI, p. 1;

52a: (a) [2 bayúc lt pa wi:c 2] the people that belong to the Paivtes,

JII, p. 4;

52b: (a) [2 bunyawicICI 2] my man, JII, p. 2.

Whether or not the variation of length finally here is a feature of the contour boundary or merely of selection cannot be determined, since as we see in the preceding examples the same variations occur medially in the contour without apparent pattern. Another example of type I free variation is the contrast: (a) [pd.?a] people-all-Indians-man, and (b) [pd?a] arrow-bullet. Only (a.) occurred long and short in connected speech, because it was the only one of the pair which occurred frequently enough.

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53a: (a) [+ hávasúwô l pác¢v 3] Havasupai people, B.S., p. 39;
53b: (a) [l pá·c¢v 2] Indians, HSII, p. 4;
53c: (a) [2 pá·c¢v 2] all the men, 4C, p. 5;
54ac (a) [1 pác (ny 1] Indians, P.W., p. 1;
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54b: (a) [3 pá·cin 1] Indians, LS, p. 1;

55a: (a) [3 pá; y tckáv 1] all the people got together, PW, p. 21;

55b: (a) [3 páy viyácmi i:yít 3] they all ran but, Buff, p. 1;

56a: (a) [3 pá y ham tev+5·k 1] he raped here there, Buff, p. 7;

56b: (a) [1 pay vayú: CIK 3] we all used to go there, L.S., p. 6;

56b; (a) [1 tù? pá:y l] all of it, Buff, p. 15;

56b₂: (a) [3 yuk pay 1] all of them, P.W., p. 8. This variation

(56b_{1,2}) cannot be said to be a feature of contour boundaries because of the same variations occurrent in contour medial.

Examples of the second type of variation are as follows:

57a: [3 tù: hmány 1] just boys, B.S., p. 5;

57b: [3 tù cæ:wik 2] just fighting, P.W., p. 14;

58a: [2 ha:ykú: ú·cə təɔm 2] I didn't see any white man, B.S.,

p. 2;

58b: [l haykú·c 3] white man, B.S., p. 3.

Examples of the third type of variation are as follows:

59a: [2 silcim wiei:m 3] they barbecued roast it, 90, p. 12;

59b: [2 si:lck 3] they roast it, 60, p. 3;

60a: [3 kúte gak pa ta:y 2] not the cld people, S.R., p. 10;

60b: [2 patay y təh 3] even when I'm old, L.S., p. 28;

60c: [2 yæ:vim wasi.vik tæ.vik kúte på tá:y wamsi.v velewicinyik 2] the old people thought for themselves, S.R., pɔ;
61a: In example 60a [kúte] occurs. This morpheme also occurs with all degrees of emphatic length. [3 kú:ttâvim 1] very long ago, B.S., p. 1; 61b: [3 kát táve 3] long ago, Buff, p. 1;
62a: [1 gak snyúvi 1] I don't do it again, CA, p. 8;
62b: [kalwi snyú:c 2] how many times? P.W., p. 9;
62c: [kật nyuvyúcim hal wako snyú:v 2] twice a year I went from Supai, P.W., p. 2.

Length, then, only occurring with ['] in citation, occurs with [']['] and ['] in connected speech and varies frequently according to these 3 types. All of these environments are unpatterned. The only explanation for these variations is that they are free or stylistic. Suppose that minimal pairs for length did not occur in citation as they do not for stress. In connected speech, there are some significant subminimal contrasts of ['] and [']: [2 uifem 2] let me see it, Buff, p. 23; [1 wicahteh 3] they should say it, Buff, p. 20. Now if examples were given showing ['] [^] and ['], for which no minimal pairs occurred in connected speech, varying as did length in 47 - 62, for which there were minimal pairs in citation, would that mean that [^], say, could be grouped with either ['] or [']? Length, in Havasupai, obviously is grammatically (fixed in some sequences, see 7.5), lexically (minimally contrasting), and stylistically distinctive in

Havasupai. Stylistically, it is an emphatic morpheme, when variations of length beyond [:] or [:], (I don't distinguish these, they are too finely different), can be ascribed to emphasis and not just hesitation or some other unknown reason for lengthening vowels. An example of length as hesitation is [1 nyuwicka:] after that, PWI, p. 2. This doesn't sound emphatic to me but like a hesitation. Some examples of emphatic length are 48c, 53c, 55a, 56a, 61a, 62b. There are some other long vowels in free variation with short that don't appear emphatic or hesitative; for example, 59b, 58a. I would say that grammatic and lexical length was [.] or [:] and stylistic everything longer, [:] [:]. ['] stress may also occur emphatic, ["]:

63a: [3 0at vyúk hakk yó:kyúc0o 3] I think that's the way it happened, S.R., p. 9; 63b: [3 nyu + vwíkwæ·l yú:ck kyúc0o 2] they used to do that, S.R., p. 14;

64a: [2³4.mɔ2] No: S.R., p. 10;

64b: LR [3 u:mcom 3] they said no, B.S., p. 36:

In 64b, note that emphatic length may occur with unemphatic stress and the reverse occurs in 64a. The same occurs in 65a, b, below.

65a: [1 ca:ny cuwo.mik 3] she put it on top, 60, p. 6;

65b: [2 nytea cak 2] above (on top) there, S.R., p. 8;

Therefore, the lexical distinctiveness of stress, all degrees, can only be assumed from their fixedness, (grammatical distinctiveness) in certain sequences.

Havasupai. Stylistically, it is an emphatic morpheme, when variations of length beyond [:] or [:], (I don't distinguish these, they are too finely different), can be ascribed to emphasis and not just hesitation or some other unknown reason for lengthening vowels. An example of length as hesitation is [1 nyuwicika:] after that, PWI, p. 2. This doesn't sound emphatic to me but like a hesitation. Some examples of emphatic length are 48c, 53c, 55a, 56a, 61a, 62b. There are some other long vowels in free variation with short that don't appear emphatic or hesitative; for example, 59b, 58a. I would say that grammatic and lexical length was [:] or [:] and stylistic everything longer, [:] [:]. ['] stress may also occur emphatic, ["]:

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In 64b, note that emphatic length may occur with unemphatic stress and the reverse occurs in 64a. The same occurs in 65a, b, below.

65a: [l ca:ny cuwo.mck 3] she put it on top, 60, p. 6;

65b: [2 ny 20a cak 2] above (on top) there, S.R., p. 87

Therefore, the lexical distinctiveness of stress, all degrees, can only be assumed from their fixedness, (grammatical distinctiveness) in certain sequences.

Length and stress function similarly: although stress doesn't vary as much as length, there are no minimal pairs for stress but there are for length. But since citation forms obviously cannot indicate the phonemic status of length in connected speech, because of the 3 types of variations, where it really counts, the citation forms will be ignored. But in connected speech, then, stress and length act alike. are no minimal pairs for either there, only assertions by me that in some occurrences they are fixed. This is no guarantee, though, that in some future corpus those sequences which I have called fixed today will not exhibit the same random variations as others given here. Therefore, "phonemic," "grouping" and other such terms really are unusable in connected speech. The emphasis, when only dealing with connected speech, can only be placed less and less on setting up "phonemes" or "grouping" features into single units and more and more on establishing criteria for distinctiveness in connected speech. Obviously, citation forms and allophonic techniques cannot help here. Three degrees of stress and length (one emphatic) are written here because (1) they occur frequently and (2) are fixed in certain sequences in my corpus where they are not allophonically predictable with a few simple rules. Although, even these fixed sequences may be shown to freely vary now or later, they would still be distinctive as orthographic guides to enable a reader to read a passage as it was spoken whether or not, in some instances, ['] varied with ['], say, would be of little consequence. How they are grouped is another matter and really not important, as long as some orthography can account for all their occurrences. One morphophonemic symbol could not account for stress here, unless I am operating on a plane that is not abstract enough. It would be simpler to write separate degrees of stress and length where they occur.

The only problem of grouping would be to decide whether a feature is a fixed or free phoneme. Stress and pitch have, in some descriptions, been combined into a so-called toneaccent symbol which function to predict pitch and/or stress sequences over a given stretch. However, I seriously challenge any notation of this kind to account for, in connected speech, what it purports to account for in citation. It has only been used to predict "grammatical" sequences of stress and/or pitch, whatever "grammatical" means, and only been used in citation. How does one distinguish "grammatical" from something that isn't grammatical, in this sense, since the two are so closely interwoven in connected speech. In 7.6 In 7.6 - 7.6.3, 79 examples are given to indicate the relations of stress, length, pitch and pause in the contour, i.e., that not any of the fixed phonemes of stresses or length , /', $^{\wedge}$, $^{\nu}$ / and /V., V/, or any of the pitches or pauses alone or in combination may condition any one of these supra-segmentals. as it was spoken whether or not, in some instances, ['] varied with ['], say, would be of little consequence. How they are grouped is another matter and really not important, as long as some orthography can account for all their occurrences. One morphophonemic symbol could not account for stress here, unless I am operating on a plane that is not abstract enough. It would be simpler to write separate degrees of stress and length where they occur.

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Possibly, the results could have been indicated with a fewer number of examples but I wanted to be sure that I covered all possible combinations. The examples are of monosyllabic, bisyllabic and trisyllabic contours ending in 3 pause and trisyllabic contours ending in 1 and 2 pause. possible pitch ± stress ± length ± pause combinations occurring in longer contours ending in 3, or of any length ending in 1 or 2, occur in these examples .- If not in one contour type, i.e., monosyllabic, then in another. 7.6.1 Monosyllabic contours ending in 3: la: [2 vá:m 3] now, J12, p. 2; lb: [3 tu 3] just, Buff, p. 24; lc: [1 yokh 3] he gets it, 8C, p. 23; ld: [1 1k 3] he said it, S.R., p. 5; bisyllabic contours ending in 3: 2a: [1 ham?úm 3] No, DWI, p. 11; 2b: [1 svi 3] I hear it, P.D., p. 5; 2c: [2 pstik 3] they are drinking, P.D., p. 11; 2d: [ciyú 3] they are coming one after the other, Buff, p. 7; 2e: [1 vá:t¢v 3] still, L.S., p. 19; 2f: [3 yúyít 3] but, L.S., p. 1. Monosyllabic contours ending in 3, may occur stressed or unstressed. Stressed vowels may occur with high rising, (\mathring{V}^3) , and high $\begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$, $\begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$, short vowels. Unstressed vowels all occurred with low pitch (V). In bisyllabic contours, final vowels may be short with primary stress with high falling pitch, $\begin{pmatrix} \chi & \chi & \chi \\ \chi & \chi & \chi \end{pmatrix}$, $\begin{pmatrix} i'' \\ v \end{pmatrix}$, 2a; secondary stressed with low rising $\begin{pmatrix} i' \\ v \end{pmatrix}$, 2f, and unstressed with low rising, 2c, or low falling pitch (V), If the final vowel is stressed the penult is unstressed.

Possibly, the results could have been indicated with a fewer number of examples but I wanted to be sure that I covered all possible combinations. The examples are of monosyllabic, bisyllabic and trisyllabic contours ending in 3 pause and trisyllabic contours ending in 1 and 2 pause. All the possible pitch ± stress ± length ± pause combinations occurring in longer contours ending in 3, or of any length ending in 1 or 2, occur in these examples. - If not in one contour type, i.e., monosyllabic, then in another. 7.6.1 Monosyllabic contours ending in 3: la: [2 vá:m 3] now, J12, p. 2; lb: [3 tù 3] just, Buff, p. 24; lc: [1 yokh 3] he gets it, 8C, p. 23; ld: [l ik 3] he said it, S.R., p. 5; bisyllabic contours ending in 3: 2a: [1 ham?um 3] No, DWI, p. 11; 2b: [1 évi 3] I hear it, P.D., p. 5; 2c: [2 pétik 3] they are drinking, P.D., p. 11; 2d: [ciyú 3] they are coming one after the other, Buff, p. 7; 2e: [1 vá:t¢v 3] still, L.S., p. 19; 2f: [3 yúyít 3] but, L.S., p. 1. Monosyllabic contours ending in 3, may occur stressed or unstressed. Stressed vowels may occur with high rising, (\mathring{V}^{2}) , and high $\begin{pmatrix} 3 & 7 \end{pmatrix}$, $\begin{pmatrix} 27 & 7 \end{pmatrix}$, short vowels. Unstressed vowels all occurred with low pitch (V). In bisyllabic contours, final vowels may be short with primary stress with high falling pitch, (V), $\begin{pmatrix} 3/6 \\ V \end{pmatrix}$, 2a; secondary stressed with low rising $\begin{pmatrix} 1/4 \\ V \end{pmatrix}$, 2f, and unstressed with low rising, 2c, or low falling pitch (V), If the final vowel is stressed the penult is unstressed.

If the final vowel is unstressed or secondary stressed the penult is stressed. The only contrasts of stress here are in 2c and 2f. 7.6.2 Trisyllabic contours ending in 3 are: 3a: [2 silk mæ·wk 3] they roast and eat it, B.S., p. 1; 3b: [1 vá:m ha wák 3] they live there now, B.S., p. 3; 3c: HR [3 vələwi? 3] that s right! JII, p. 2; 3d: [1 Gák wayók 3] we were living there, Buff, p. 1. In 3a-c the stress sequences are [VVV]. 4a: [2 uui 3] I saw it, P.W., p. 2; 4b: [2 nyc ick 3] that was their idea, S.R., p. 13; 4c: [3 wasi:vik 3] she is thinking, B.S., p. 6; 4d: [1 tu pɛ:mk 3] they are gone, Buff, p. 26; 4e: [1 tu yé. vim 3] myself, B.S., p. 3; 4f: [1 pann kita:yv 3] the old people, P.D., p. 1; 4g: [1 pukonyuk 3] part of the plant underground, D.W.I, p. 2; 4h: [1 m (sæ•v yît 3] it's scary, P.W., p. 20. All examples, from 4a-g,h have a primary stressed penult syllable. 5a: [2 vasú má:v 3] eating green things, B.S., p. 1; 5b: [3 vakak kwe.w 3] they don't talk, 8C, p. 10; 5c: [l nythayyok 3] get them there, H.S., p. 4, Laundry; 5a,b,c have a primary stressed penult, like 4a-e,g,h.

6a,b like 3a-c, unlike 5a,b and 4a-e,g,h, have an unstressed penult.

6b: [1 kwacinyikh 3]

6a: [1 smac vak 3] I feel sleepy, C.A., p. 7;

7a: [3 k¢t táva: 3] long ago, Buff, p. 1;

7b: [l tévtévnyem 3] after it dries, 5C, p. 2.

7a,b like 4a-e,g,h, 5a,b has a primary stressed penult.

In trisyllabic contours ending in 3, if the final V is ['], the penult contrasts may be ['] and ['], 3a-c, 5a,b. If the penult is stressed, the antepenult contrast is secondary stressed, 4g, or unstressed. In 7a,b two primary stresses occur initially. Two stressed vowels initially is predictable in 7b where the initial syllable is reduplicated, but it is not predictable in 7a where the first two syllables are not reduplicated, and here [^], ['] and ['] contrast when the penult is stressed. All reduplicated syllables are primary stressed to pause when they occur in sequence.

If the penult is unstressed the antepenult contrast may be stressed or secondary stressed, 3a-c, 6a-b, 4f, respectively. If the final vowel is secondary stressed the penult contrast is primary stressed or unstressed, 4g,h and 6a, respectively.

If the final vowel is unstressed the penult contrast may be primary or unstressed, 4a-e, 6b, respectively. (6b is very common.)

No short stressed vowels occur finally when preceded by a long stressed vowel. But long stressed vowels may be preceded by a contrast of short unstressed or stressed vowels, 3a,b, 4f, and 5a,b respectively. However, if the penult is stressed, in

these cases, as in 5a,b, the antepenult is unstressed. That is, no two primary stressed vowels occur initially when the last vowel is long and primary stressed. This is the only instance thus far in which at least one degree of stress is predictable. However at least two other stresses and one length must also be written and this is only a 3 syllable contour; and when the last vowel is unstressed and long, two unpredictable primary stressed syllables do occur initially, 7a.

If the penult is long it is primary stressed, if short there may be contrasts of primary or unstressed vowels: 4c-ê, 4h and 4a,b, 4g, 5a, 5b, and 3a-c, 4f, 6a,b. Therefore, the only stress sequence, grouping [^] as unstressed now, that didn't occur here was two unstressed syllables initially.

Now in just the environment of a trisyllabic contour ending in 3 pause at least two primary stresses, and other degrees, must be written when they occur. It is not possible to predict all the stresses, primary or otherwise, disregarding pitch for the moment, by just writing one primary stress: When $[\mathring{V} \cdot]$ occurs finally, contrasts of $[\mathring{V}$ and $\mathring{V}]$ may occur penultimately, 3a,b, 4f and 5a,b respectively. (I am repeating this); when $[\mathring{V}]$ occurs finally, contrasts of $[\mathring{V}$ and $\mathring{V}]$ may occur penultimately, 4g,h and 6a, respectively. Also, if $[\mathring{V}]$ occurs finally, $[\mathring{V}]$ and $[\mathring{V}]$ may occur penultimately, 4a-e, 6b respectively. The only stress sequence that didn't occur was

[VV] initially. It is possible then that one stress could be marked initially: If the first vowel is [V] the second must be $[\mathring{V}]$ but the third can contrast $[\mathring{V}]$ or $[\mathring{V}]$, 4a-e, 5a,b respectively; and unstressed $[\check{\mathtt{V}}]$ can be long or short in free variation, as we have seen, so length cannot be depended upon to predict stress. However, ignoring this free variation for the moment, stress could be predicted from an initial unstressed syllable, just by these examples, with the rule that if the initial V is unstressed and the final is long the last two Vs are primary stressed and if the final [V] is short only the penult is primary stressed. This would account for the stresses in 4a-e and 5a,b. But if the first vowel is [V] the second may contrast ['] or ['] -3a-e, 6a,b and 7a; and if the second is [] the third may contrast [] 6b, or [] 3a-e, and length cannot help here. Also there are the contrasts of [] [] and ['] initially before short stressed syllables in 4g, 5a, 7a and the contrasts, of [^] and ['] ['], finally after unstressed syllables 6a, 6b, 3a-c. Also [] contrasts with [] initially before short unstressed syllables in 4a,b and 4f respectively, and also finally, after long stressed syllables, 4c-e, 4h, and finally after short stressed syllables, 4g, 4a, b respectively. Therefore, only in initial unstressed syllables here could stress sequences be predicted and these rules depend on length which has been shown to be erratic in connected speech.

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Now in all of these [^][^] and ['][^] contrasts, pitch cannot help predict the other 2 stresses. Both [^] and ['] can occur on the same pitches; (these are NR unless otherwise marked); in 3a and 4f initially and óa and 3b finally where they minimally contrast as to pitch and position in the contour in these sequences all low pitched vowels, lower than 2, are unstressed. But in 5c and 4b, [V] and [V] contrast minimally in final position. Therefore, at least here, ['] and ['] would have to be written. However, with regard to pitch, [^] and ['] still are in complementary distribution here. This will be taken up again later.

I wouldn't try to predict pitch. Long final stressed V may have pitch contrasts (free variation) of V, V, and V. While unstressed final V may have similar contrasts of V, V. Short stressed V may have contrasts of V or V. Nor can stress plus length predict pitch or pitch plus length predict stress, even if one stress is written, as I have pointed out. The simplest solution here would be to write as many stresses as occur.

7.6.2.1 In trisyllabic contours ending in 2, all sequences which occurred in 3 may occur and more. In 2, unlike 3, a short stressed final V may be preceded by a long stressed V or contrasts of a short \mathring{V} or \mathring{V} .

Examples of trisyllabic contours ending in 2:
8a: [1 too:m wic 2] they didn't do it, P.W., p. 15;

Now in all of these [^]-['] and ['] [^] contrasts, pitch cannot help predict the other 2 stresses. Both [^] and ['] can occur on the same pitches; (these are NR unless otherwise marked); in 3a and 4f initially and óa and 3b finally where they minimally contrast as to pitch and position in the contour in these sequences all low pitched vowels, lower than 2, are unstressed. But in 5c and 4b, [V] and [V] contrast minimally in final position. Therefore, at least here, ['] and ['] would have to be written. However, with regard to pitch, [^] and ['] still are in complementary distribution here. This will be taken up again later.

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7.6.2.1 In trisyllabic contours ending in 2-, all sequences which occurred in 3 may occur and more. In 2 , unlike 3-, a short stressed final V may be preceded by a long stressed V or contrasts of a short \mathring{V} or \mathring{V} .

Examples of trisyllabic contours ending in 2::
8a: [1 teo:m wit 2] they didn't do it, P.W., p. 15;

8b: [1 nyúva yúk 2] I did that, L.S., p. 10;

8c: [1 tú pà tsk 2] my people, JII, p. 2.

Another sequence that occurred in 2 and didn't occur in 3, is an unstressed penult preceded by contrasts of $[\mathring{V}]$ or $[\mathring{V}]$.

9a: [3 psm ham?úm 2] that is all, 6C, p. 7;

9b: [1 bahamok 2] they are mixing it, 5C, p. 4;

9c: [3 matiny kwik 2] we weave yucca, Jl3, p. 8.

Here [^] ['] contrast initially and finally as they did in 3.

In 10, V may contrast with V finally:

10a: [3 kúte vák 2] a long time here, CA, p. 2;

10b: [3 tə pú:lcik 2] we just wet it, J13, p. 2.

Although the stresses cannot be predicted here, the [V] could, therefore, as far as 2 and 3 contours are concerned only [V] may be predicted, by pitch, but even with [V] predicted, [V] and [A] must be written. As in 3., no [VV] sequences occurred initially in 2 and unlike 3, no [VV] occurred initially.

7.6.2.2 In trisyllabic contours ending in 1, all sequences

occurring in 2 and 3 occur. Also [V:] occurs finally in these contours ending in 1 which didn't occur in 2 and 3. Examples are given below:

Sequences in [VVV]: lla: [2 pie catm 1] she almost died,

JIII, p. 1; llb: [1 mwi:c kwiceo 1] they used to do that, PDLS,

p. 3; llc: [1 psm miyút 1] they are gone but, 40, p. 5.

Sequences in [VVV]. 12a: [ny. 6ám cak 1] above there, SR, p. 8; 12b: [3 0əpal ka: yny 1] different kinds of peaches,

6C, p. 7. Note the initial and final contrasts of ['] and ['] here.

Sequences in [VVV]: 14a: [3 yæ:k/t/k l] early in the morning, B.S., p. 12; 14b: [1 mak/cim l] he left it, Buff, p. 19; 14c: [2 okwayacl] smoke, 5C, p. 5.

Sequences in [VVV]: 15a: [2 tu u:l¢v l] just riding,
PW, p. 2; 15b: [2 medikôc l] beans, 6C, p. 4; 15c: [1 cuwamu:c l]
Navahos, J12, p. 4; 15d: [3 tu: hmá:nye l] just boys, B.S.,
p. 5; 15e: [3 halmatem l] he was living there, P.S., p. 3.
Sequences in [VVV]:

16a: [2 kúviyæ.m 1] on the other side, Buff, p. 2;

16b: [2 pácuvc ték 1] many people, 4C, p. 1.

Sequences in [ŶŸÝ]:

13a: [l tû vəsmacl] you go to sleep, CA, p. 7;

13b: [3 hal+owak 1] I am there with it, L.S., p. 19;

13c: [2 hal vokwa:c l] that is what they talk about in there,
PD, p. 5.

From these examples and others given previously, it is certain that [^] ['] ['] contrast without taking any other feature into consideration. It was shown in contours ending in 2 and 3 and in the section on stress and register that ['] and [^], where it is assumed [^] is fixed in all of its occurrences, contrast in the same contour position, syllable type, before the same degree of pause and in the same register type, and, finally, under the same pitches and length. No

There are few occurrences of final V with pitch \pm stress \pm length that could not occur before all degrees of pause.

The exceptions are v^3 which occurred with v and v before 3 but not before 2 and v^3 did not occur before 3. Also v^3 and v^3 occurred before 1 but not in the same total stress sequence and pitch sequence as in 2. Otherwise, v^3 can occur before all pauses as can v^3 and other pitches. The only pitch-stress restrictions are that v^3 never occurs with low pitch, (not in a FL or LR) and v^3 , and v^3 never occurs with 2, 3 pitch levels except in a HR.

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Furthermore I see no way of predicting stress within the contour, or even writing just one stress, by mora counting. Consider the following:

```
17a: [3 kút ə vak 2] long ago, CA, p. 2;
17b: [3 kéləwik 3] motion of mixing, 5C, p. 7;
17c: [1 báhamôk 2] they are mixing it, 5C, p. 4;
17d: [2 cəθúlôk 2] they wash her, 8C, p. 7;
18a: [2 váml ləwim 2] now I am ready, B.S., p. 8;
18b: [1 vá vawíclk 1] it's like that B.S., p. 8;
18c: [1 θəpállvclm] the peaches over there, P.S., p. 2;
18d: [1 təó·m wic 2] they didn't do it,
18e: [3 ciá·lclk 2] put it in, JIII, p. 5;
19a: [3 vəkák gwaé:w] they don't talk, 8C, p. 10;
19b: [2 sīllk mae:wk] they don't talk, 8C, p. 10;
19b: [2 sīllk mae:wk] they roast and eat it, B.S., p. 1;
20a: [2 nyl ?iclk 3] that was their idea, S.R., p. 1;
20b: [1 vák+wayók 3] they live around here, 4C, p. 2;
20c: [1 smáclvák 3] they go to sleep, C.A., p. 7;
21a: [3 piê cátm 1] she almost died, JIII, p. 5;
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One stress per contour, even in these trisyllabic contours then, cannot be written. There are no alternating stress sequences which do not contrast with two final primary or unstressed syllables or two initial primary stressed syllables or two initial syllables where the first is [^] and the second may be [$^{\prime}$] or [$^{\prime}$]. Similarly, finally, where the final vowel may be [$^{\prime}$] and the penult [$^{\prime}$] or [$^{\prime}$]. And since pitch \pm length \pm pause cannot predict the other two stresses they all must be written.

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17a: [ 3 kút; ə võk 2] long ago, CA, p. 2;
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19b: [2 sīllk mæ:wk 3] they roast and eat it, B.S., p. 1;
20a: [2 nyl ?iclk 3] that was their idea, S.R., p. 1;
20b: [1 vákæayók 3] they live around here, 4C, p. 2;
20c: [1 smáclvák 3] they go to sleep, C.A., p. 7;
21a: [ 3 piθ cátm 1] she almost died, JIII, p. 5;
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2lb: [mwi:c kwicθo l] they used to do that,

21c: [3 sû:mácln l] watermelon, P.D., p. 2;

2ld: [l cuwomû:c l] Navahos, J12, p. 4;

21e: [3 hal waatom 1] they were living there, B.S., p. 3;

2lf: [1 tuvesmac 1] you go to sleep, C.A., p. 7;

2lg: [2 hal vogwa:c 1] that's what they talk about, L.S., p. 19;

21h: [2 kúviyæ m l] on the other side, Buff, p. 2.

In 17a-d all the V are the same length and there is no pattern set by any degree of pause, i.e., 2 may occur with [^] and ['] finally and ['] and ['] initially. There are no consonant or vowel clusters. But the stresses are different. I can see no pattern here for mora counting to account for these different stress sequences.

In 18a-c, there is the same alternating C or SC and V pattern in a 4 syllable contour, and all the vowels are short. However, in final position 18a has $\tilde{V}\tilde{V}$, 18b has $\tilde{V}\tilde{V}$ and 18c $\tilde{V}\tilde{V}$. In 18 d, e, the penult is lengthened in a vowel cluster but the final vowel in 18d is stressed and the final vowel in 18e is unstressed in closed syllables.

In 19a, b the final vowels are long and stressed but in 19a the penult is stressed and in 19b it is unstressed in minimal pairs. The only difference is that the last syllable begins in a CSC and in 19b the last syllable begins in just a single C. But this is not a pattern that can hold for all these occurrences, (see 21a, b).

In 20a-c all the vowels are the same length but there are three stress patterns. The combinations of segmental phones differ, but if these combinations are made into rules, a rule would have to be

2lb: [mwi:c kwicθo l] they used to do that,

2lc: [3 sû:mácln l] watermelon, P.D., p. 2;

2ld: [1 cuwámû:c l] Navahos, J12, p. 4;

2le: [3 hâl waátəm l] they were living there, B.S., p.];

2lf: [1 tùvəsmác l] you go to sleep, C.A., p. 7;

2lg: [2 hâl vogwá:c l] that's what they talk about, L.S., p. 19;

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In 17a-d all the V are the same length and there is no pattern set by any degree of pause, i.e., 2 may occur with [^] and ['] finally and ['] and ['] initially. There are no consonant or vowel clusters. But the stresses are different. I can see no pattern here for mora counting to account for these different stress sequences.

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In 20a-c all the vowels are the same length but there are three stress patterns. The combinations of segmental phones differ, but if these combinations are made into rules, a rule would have to be

formulated for every occurrence of CSC, CC. This still wouldn't account for 19b, and 21a, 21e, and 20b and sequences in which there are alternating C, SC and V sequences. It is not the case that in every sequence of CSC, say, the following vowel is stressed. Compare 21e, 20b and 18d. In those cases where rules for the combinations of segmental phones could predict some stresses, for this small corpus, a rule for each cluster, [sm], [kw] (compare 20b and 21b), [ny] [mw], (a rule couldn'st just apply to CSC because of 20b and 21b) and others would have to be given, and I repeat, there would still be other sequences for which no rules could be formulated. In 21c and 21b [\hat{V} : \hat{V}] contrasts with [\hat{V} : \hat{V}] and 21e, 21g contrasts initially. Similarly, 21a [\hat{V} \hat{V}] and 21d [\hat{V} \hat{V}] contrast initially. All these sequences have vowels of the same length, except the final vowel in 21d and 21g, but 21f may have the same stress sequence as 21g with short stressed final vowel.

Length is too variable to account for any stresses in such sequences in a corpus of connected speech. Also other criteria cannot be used to account for stress, by counting mora, in whatever system, in this corpus.

In view of the discussion of this section no feature or combination of features or technique like mora counting, can account for the stress sequences here. Furthermore, no tone-accent can account for the registers, as I have pointed out above, or for the stresses since the same stress pitch combination, or any other combination can occur before different stress sequences. At least one other stress would have to be marked.

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and [1] as fixed phonemes 2) to discuss and phonemicize [4] and [1] as fixed phonemes 2) to discuss and phonemicize all the stylistic free variants and the phonemes involved which only occur at pause points 3) show that no combination of segmentals and/or supra-segmentals but [1] and [1] can indicate pause points and finally 4) set up pitch as expressive free phonemes. At the end of this section, it is noted that all fixed and free phonemes have been shown, by example, to be independent of one another. Voiceless vowels, voiceless syllables and sequences of voiceless syllables, occurrences of [?] and [h], actualized differently phonetically at pause points than medially and occurring in sequences in which they never occur medially, are all features of pause. There are only one or two occurrences of medial voiceless vowels in my whole corpus. They are usually the result of too fast a delivery. Voiceless syllables and sequences of voiceless syllables never occurred medially.

When voiceless vowels or syllables occur before pause, they are quite lax and the culmination of a falling or low falling pitch sequence which always occurs simultaneously with these voiceless features in all registers. In the one or two occurrences of a medial voiceless vowel, the pitch occurring with them was high or sustained and did not drop in them or before them. The sequence, as I have said, is very quickly delivered. At pause, though, there is a slowing up, giving the impression of laxness with a corresponding drop or fall which occurs simultaneously and/or before the voiceless sequences before pause. When [h] occurs finally, it is as an aspirated release for a voiced or voiceless vowel

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or consonant. The release is preceded by a short hold on this vowel or consonant. The release is preceded by a short hold on the C or V. Also when [h] occurs finally, like the voiceless sequences, it always occurs with a drop or fall in pitch, which may also precede it, and a deacceleration of delivery. In medial position, for which I have given many examples of [h], the pitch of the sequence in which [h] occurs is sustained and never falls or drops except, of course, when [h] occurs in falling contours. In falling contours, in medial position, the rise and falls of the individual pitches are the same as in non-falling contours; but when [h] occurs finally, in a falling or non-falling ∞ ntour, there is just a drop or fall in pitch. Also, [h] is never an aspirated release medially as it is finally.

[?] also occurs finally and medially. When it occurs finally with an aspirated release, this distinguishes it from medial occurrences. Otherwise only the features already mentioned for [h] and the woiceless sequences distinguish [?] finally from medially. In final position it is accompanied by a de-acceleration, a laxness and drop or fall in pitch which can be described as distinguishing [?], as it did [h], finally from medially. All of these features then are components of final silent pause because either they only occur there or because they occur there under conditions they never occur with medially. Lastly, sequences of [C±?#] and others occur finally which do not occur medially, under the same speed and pitch conditions.

I should note here that these are some of the features I referred to in the opening section, 1., as features of pause which could never

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substitute for /+/ or /-/, medially, or vice-versa. Such substitutions would be clearly ungrammatical since these features are bound to final silent pause. Other such features will be discussed in succeeding sections.

At pause points all voiceless sequences and other features bound to pause are in free variation with their voiced counterparts, or other features not bound to pause. The following examples show this free variation. (I see no need to exemplify one occurrence of a medial voiceless vowel.)

The following is an example of a final variation of a voicedvoiceless vowel.

la: [1 tekyik tenyih] mwic 2 3] they press down, they do it, J5, p. 4;
1b: [1 wic lm+wic 3] they do that, P. D., p. 9;

An example of a voiceless-voiced syllable:

2a: [2 tu yaé·vlm+wicihi W E H 3] we will do it ourselves, S.R., p. 18; 2b: [1 8ihikwsh 3] they will drink, S.R., p. 8;

2a, 2b varies with [W]: $[3 \text{ wicok} \underline{W} 3]$ that is the way they do it.

An example of a voiced-voiceless sequence of syllables:

3a: [2 widwidnylCIK7H 3] when they finished, J13, p. 2;

3b: [3 hak nyu wicike 3] they didn't do that, J5, p. 8;

An example of a variation of $[CV]_{\sim}[CV]_{\sim}[CVH]$ (voiceless V) $[CVh]_{\sim}[CVH]$ (all voiceless) $\sim [CV?]_{\sim}[CVh?]$:

4a: [1 nyawik00 3] If I heard it, S.R., p. 16;

4b: [3 θανγάκ hak kyổ:kyắcθο: 3] that's the way it happened before, S.R., p. 5
4c: [1 wiclmwice kwidθOH 3] they used to do that, P.W., p. 16;

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4d: [l hanclm myucik+yudeoh 3] they used to be good, P.W., p. 11;
4e: [2 paés nyquiwi: OH3] if we have money, JPD, p. 2;
4f: [3 yúkθο?] but, P.W., p. 3;
4g: [3 yúkθoh?] but, P.W., p. 3;
(4h: [3 vuk\theta oh 2] but, P.W., p. 5.)
       An example of [V] - [V?h]:
5a: [1 hand 2] it's good, 8C, p. 14;
5b: [1 hána?h 2] it's good, 8C, p. 9.
(When [?h] occurs medially it is always [?-3h]. Here [h] is the aspirated
release described above.) An example of [VC]~[VCH] (all voiceless)~
[VC?h]:
6a: [3 \text{ yae:cm} \frac{1}{k} 2] they are going, B.S., p. 10;
6b: [1 yae:cmIKH 1] they are going, Buff, p. 1;
6c: [3 ma:ny ku:t lm +yae:cmlk?h 2] the children went far away, B.S. p. 31.
        An example of [C] ~ [Ch]:
7a: [1 yahá:nlk 3] It's fixed, H.S. Laund., p. 2;
7b: [l ya?hánlkh 3] it's fixed, B.S., p. ll;
        An example of [C] ~ [C?].
 8a: [3 soakciatlk 3] they soaked it for awhile, 7C, p. 4;
 8b: [1 nyl gwilcietlk? 2] they stretch it, 7C, p. 4.
        An example of [C] ~ [Ch] ~ [C\tilde{V}:], (the last as a hesitation form).
 9a: [3 nyuwiclk 3] they do that, P.W.I., p. 4;
 9b: [J nyuwiclkh ] they do that, P.D., p. 2;
 9c: [1 nyuwic lka: iskonyə 3] they did that..., D.W.I., p. 2.
        These are representative of the types of features bound to pause.
 Neither of these features are bound to any particular degree of pause.
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4d: [1 hanclm myűcik+yűd0oh 3] they used to be good, P.W., p. 11;
4e: [2 paés nyquiwi: OH] if we have money, JPD, p. 2;
4f: [3 vúkθο?] but, P.W., p. 3;
4g: [3 yúkθoh?] but, P.W., p. 3;
(4h: [3 yúkθoh 2] but, P.W., p. 5.)
       An example of [\breve{V}] - [\breve{V}?h]:
5a: [1 hand 2] it's good, 8C, p. 14;
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(When [?h] occurs medially it is always [?-3h]. Here [h] is the aspirated
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[VC?h]:
6a: [3 \text{ yae:cm} ]_{\frac{k}{k}}^{2} 2] they are going, B.S., p. 10;
6b: [1 yaé:cmIKH 1] they are going, Buff, p. 1;
6c: [3 ma:ny ku:t lm +yae:cmlk?h 2] the children went far away, B.S. p. 31.
        An example of [C] ~ [Ch]:
7a: [l ychá:nlk 3] It's fixed, H.S. Laund., p. 2;
7b: [1 ya?hánlkh 3] it's fixed, B.S., p. 11;
        An example of [C] ~ [C?].
 8a: [3 soukcietlk 3] they soaked it for awhile, 7C, p. 4;
 8b: [1 nyl gwilciətlk? 2] they stretch it, 7C, p. 4.
        An example of [C] ~ [Ch] ~ [CV:], (the last as a hesitation form).
 9a: [3 nyuwiclk 3] they do that, P.W.I., p. 4;
 9b: [J nyuwiclkh 2] they do that, P.D., p. 2;
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         These are representative of the types of features bound to pause.
 Neither of these features are bound to any particular degree of pause.
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When [h] occurs finally it is a feature of pause. The same may be said of voiceless vowels and syllables which only occur at pause. It has been shown that all voiceless features vary freely with their voiced counterparts, in the same environment. Therefore phonetic voiceless vowels are written phonemically as their voiced counterparts and every voiced vowel potentially has a final voiceless allophone. Since [h] occurs initially and medially where the voiced vowels do and they contrast in these positions, and therefore the voiceless vowels have not been grouped with [h]. Also because of these contrasts and because, therefore, voiceless vowels are in complementary distribution with voiced vowels medially, and, finally, in free variation, and because [h] occurs finally as a consonantal release and voiceless vowels also occur in these positions, [h] must be grouped separately. (See 9. for allophones.)

The sequences [?h] \sim [h?] \sim [W?h] etc. all occur finally. Since [?], [h] are phonemes elsewhere, they are written finally as they occur, although the particular sequences in which they occur finally and their particular phonetic actualizations finally, do not occur medially. To account for the voiceless allophones and for allophones of [?] [h] and other sequences at pause where they always occur with a drop to or fall in pitch and de-acceleration of delivery, a $/\sqrt{}$ fixed phoneme is written when these sequences occur at silent pause. This is a grammatical phoneme written to preserve the co-occurrence of pause with certain features which only occur at pause. This phoneme, then, is composed of 2 or more bound features; the pause, the features bound to pause and the de-acceleration and drop and fall of pitch. Voiceless syllables

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The sequences [?h].[h?].[h?].[v?h] etc. all occur finally. Since [?],

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features which only occur at pause. This phoneme, then, is composed
of 2 or more bound features; the pause, the features bound to pause and
the de-acceleration and drop and fall of pitch. Voiceless syllables

could not substitute everywhere for voiced medially; Nor could sequences of [C?h] and others which characteristically only occur at pause and characteristically only occur there with de-acceleration and drop and fall in pitch.

7.6.3.1 Some pitches described in the previous section on trisyllabic contours are limited in their distribution in the contour. V, V, V, V, V. V. The last three represent falling pitches on the vowels. These pitches rarely occur but at pause points, not /+/ or /-/. Therefore substituting any of these pitches for pitches which can occur before /+/ or /-/ would also be ungrammatical. None of the prepausal features just described, bound to pause occur post-pausally nor do the four pitch sequences, just mentioned, occur post-pausally. These negative distributions were exemplified by any and all the examples given up to now, which were all phonetic. Also these same examples showed that none of the post-pausal features of length, stress or pitch were distinctive of that position.

I can find no phonological definitions for grammatical units such as phrase, sentence etc. A / // occurrence could be at a sentence or phrase boundary. It is wholly arbitrary which is selected. In citation forms there are minimal contrasts of high rising final pitch and low pitch contrasting interrogative and declarative sequences, but in connected speech all questions began with an interrogative particle and ended on low pitch and were phonologically undifferentiated from declarative sequences. It has been shown here that rising pitch, V, occurs on declarative sequences.

In citation forms there were 5 types of interrogative/declarative contrasts.

- A. Minimal contrasts of high pitch and low pitch finally.
- B. Final interrogative particles occurring with high final pitch versus no occurrence of the interrogative particle in declarative sequences.
- C. Use of initial interrogative particle with final interrogative particle which may or may not occur with high final pitch versus no particle in declarative sequences.
- D. Use of initial interrogative particle, with no final particle, combined with high final pitch versus no interrogative particle for declarative sequences.
- E. Addition of only an interrogative final particles with no initial interrogative particle, which may occur with high final pitch.

In all these contrasts, but one, an interrogative particle is the main contrastive feature. There is no occurrences in texts of an interrogative sequence in which at least one interrogative particle did not occur. For examples of interrogative sequences as they occurred in texts see the section on registers examples la, lb. There, la occurred with high final pitch and lb with low final pitch and both occurred with an initial interrogative particle [ka]. Another example of an interrogative sequence in texts with [ka] occurring medially and high pitch finally is [l kiyú: kaik l] what are they called that come from there? P.W., p. 7.

Examples of the 5 types of interrogative/declarative contrasts in citation mentioned above:

Al: [məmoŋwi] are you eating?

In citation forms there were 5 types of interrogative/declarative contrasts.

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Examples of the 5 types of interrogative/declarative contrasts in citation mentioned above:

Al: [məmáŋwɛ] are you eating?

- A2: [məmuywi] you are eating.
- A3: [yamyu] are you going?
- A4: [yamyu] you are going.
- Bl: [nylocvókihikyd] he'll return
- B2: [nyloac vokihikyuma] he'll return, won't he?
- B): [nyloc clndkwi] he'll lose.
- B4: [nyloac clnalkwima] he'll lose, won't he?
- Cl: [kúc nylævclk lúp nylnyuwé?ɛ] (This [é?ɛ] final sequence varies freely with [é?] or [é].) who collapsed when they heard it?
- C2: [hmé?cc nylm+úk lápikúnyə] the boy collapsed when he saw it;
- Dl: [kác mácukyuwí] who grabbed it?
- D2: [má?kyuwk] I grabbed it.
- El: [macnylm+evə lapnylnyuwe?e] when you heard it, did you collapse?
- E2: [nylθάc nyauk lapikunya] when he saw it he collapsed.

(In high register contours an example of an apparent exclammatory pitch sequence was given: HR [2 vələwi?] that is right! JII, p. 2.)

The phonological characteristics of contours, then, may or may not be coincident with what are ultimately labeled sentence, phrase or other grammatical units. The only features which are definite phonemic contour markers are /4/ and the pitches bound to pause, \tilde{V} , \tilde{V} ,

Furthermore, I wouldn't say that only certain pitches are bound to a certain "terminal rise" or fall; or that different pairs of terminal markers, tone-accent notations, can predict a pitch or stress sequence in a contour. I've challenged this notion before. Lastly, I wouldn t care to say that any juncture defines a grammatical unit even saying it by implication, by writing [?..,], or some other conventional orthographic marks for grammatical units, but not naming the units outright. Any description which purports to have these features in the language is probably based on a corpus of no more than 10 examples of citation forms.

and initially. They may occur with the same pitches in these medial and initially ositions except V, V, V, V, V.

la: [1 gdk haykú gwae:wcə gdk qe·clm tlsspɔ́nyð təop 2] I don't know how to speak English, 8C, p. 9; Here [""] occurs initially, medially and finally in the contour, but only V occurs finally. [""] didn't occur initially in trisyllabic contours. (There is no need to give examples of V, V, V, V bound to pause. They have been exemplified enough positively and negatively in preceding examples.)

2a: [2 td:kkələwik 2] they are grinding it, 6C, p. 5;

2b: [3 nyiyúm myúclk 3] she did that, 8C, p. 10; Here [""] occurs initially and finally. This also occurred in the examples on tri-

Ja: [2 túcuv vélewíme yaé·cmlk 2] they are going like that, B.S.,
p. 1. Here [' '] occurs medially and initially. This can go on and
on. In these examples and those given for trisyllabic contours and, by

syllabic contours.

Furthermore, I wouldn't say that only certain pitches are bound to a certain "terminal rise" or fall; or that different pairs of terminal markers, tone-accent notations, can predict a pitch or stress sequence in a contour. I've challenged this notion before. Lastly, I wouldn t care to say that any juncture defines a grammatical unit even saying it by implication, by writing [?..,], or some other conventional orthographic marks for grammatical units, but not naming the units outright. Any description which purports to have these features in the language is probably based on a corpus of no more than 10 examples of citation forms.

7.6.3.2 Stress sequences which occurred finally may occur medially and initially. They may occur with the same pitches in these medial and initial positions except v, v, v, v.

la: [1 gdk haykú gwæ: wcə gdk qe.clm tlssponyð təóp 2] I don t know how to speak English, 8C, p. 9; Here [""] occurs initially, medially and finally in the contour, but only v occurs finally. [""] didn't occur initially in trisyllabic contours. (There is no need to give examples of v, v, v, v bound to pause. They have been exemplified enough positively and negatively in preceding examples.)

2a: [2 td:kkələwik 2] they are grinding it, 6C, p. 5;

2b: [3 nyiyúm myűclk 3] she did that, 8C, p. 10; Here [""] occurs initially and finally. This also occurred in the examples on trisyllabic contours.

3a: [2 tứcuv vələw mə yæ.cmlk 2] they are going like that, B.S.,

p. 1 . Here [' '] occurs medially and initially. This can go on and

on. In these examples and those given for trisyllabic contours and, by

the way, monosyllabic and bisyllabic contours, the particular stress sequence \pm pitches \pm length cannot indicate contour beginnings or ends. Only certain $/\sqrt{\ }/$ and other pitches bound to pause can.

The only stress sequence which occurs very rarely medially but may occur finally with more frequency is [VVV#]. This only occurs in contours of 5 or more syllables. They may occur before all degrees of pause.

4a: [1 nyl sə?ámciətəm 3] they closed it, B.S., p. 5;
4b: [nyawik nyanya wi:ciətîk 3] they did it this way in the past, 5C, p. 3;
5a: [1 nyl gwilciətîk 2] they stretched it, 7C, p. 4;
6a: [1 wiciətîk 1] they finished it, D.W.I, p. 11.
This is the only segmental phone 3 vowel sequence which may occur finally, [iəl], where no [1] may occur and [1] only occurs as a free

The [ə] occurs as a transitional vowel. In these sequences and in a 2 syllable final sequence in which ['] or ['] doesn't occur, the sequence [''] is predictable. In a 'syllable final sequence, in a contour of 5 syllables or more, where ['] does not occur, the first and third syllables occur with ['] and the third may freely vary with [']. The second V, [ə], is unstressed. In a final 2 syllable sequence under the same conditions, the final vowel is ['], or ['] in free variation, and the penult is unstressed. No examples are given here. See previous examples.

7.7 The status of the registers like the status of the pitch, pause stress occurrences, except $/\psi/$, and other features bound to pause, are the same. All are independent of each other. A description of the

variant of [] finally, 4b.

the way, monosyllabic and bisyllabic contours, the particular stress sequence \pm pitches \pm length cannot indicate contour beginnings or ends. Only certain $/\sqrt{\ }$ and other pitches bound to pause can.

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4a: [1 nyl sə ?ámciətəm 3] they closed it, B.S., p. 5;
4b: [nyawik nyanya wi:ciətîk 3] they did it this way in the past, 5C, p. 3;
5a: [1 nyl gwllciətîk 2] they stretched it, 7C, p. 4;
6a: [1 wiciətîk 1] they finished it, D.W.I, p. 11.
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expressive function of registers will be given in 7.9. The pitch-stress combinations which have occurred finally so far are: V, V, V; V, V; V, V, V, V, V, V, V, V. None of these, except the last and next to last set can be said to be bound to pause or any particular degree of pause. The first and second set may occur medially and initially. It doesn't seem to matter, except expressively perhaps, that V is substituted for V or V finally. However this substitution could not occur in any other contour position. In this respect all these pitch-stress sequences are in free variation finally, but not medially. (V, V; V, V freely vary in all positions.) There is then no apparent reason for grouping them into different phonemes except V, V, V, V. They are obviously unpredictable but contrast stylistically and are actually allophones of # Pitch, or with reference to degrees of pause, which has similar occurrences and significance, Pause. Strictly from the phonemic point of view they are non-distinctive and not phonemes (but some other unit here called free phoneme) since 2 pause substitutes for 3 pause etc. randomly and so do the pitches, keeping certain restrictions in mind. Except for the features mentioned above they are not bound to any other feature, as all these examples have shown. Therefore they are written separately only to characterize contours as they occurred in the corpus and as a guide to reading an utterance as it was spoken. No rules can be given for their occurrence since they vary unpredictably. They do not behave, though, as we have seen up to now, like the fixed suprasegmental phonemes [, +, ', ', ', ']. As these latter were taken up individually in preceding sections, they were shown to have some feature which required that they be written and these features are what

expressive function of registers will be given in 7.9. The pitch-stress combinations which have occurred finally so far are: V, V, V; V, V; V, V, V, V, V, V, V, V. None of these, except the last and next to last set can be said to be bound to pause or any particular degree of pause. The first and second set may occur medially and initially. It doesn't seem to matter, except expressively perhaps, that V is substituted for V or V finally. However this substitution could not occur in any other contour position. In this respect all these pitch-stress sequences are in free variation finally, but not medially. (V, V; V, V freely vary in all positions.) There is then no apparent reason for grouping them into different phonemes except V, V, V, V. They are obviously unpredictable but contrast stylistically and are actually allophones of a Pitch, or with reference to degrees of pause, which has similar occurrences and significance, Pause. Strictly from the phonemic point of view they are non-distinctive and not phonemes (but some other unit here called free phoneme) since 2 pause substitutes for 3 pause etc. randomly and so do the pitches, keeping certain restrictions in mind. Except for the features mentioned above they are not bound to any other feature, as all these examples have shown. Therefore they are written separately only to characterize contours as they occurred in the corpus and as a guide to reading an utterance as it was spoken. No rules can be given for their occurrence since they vary unpredictably. They do not behave, though, as we have seen up to now, like the fixed suprasegmental phonemes [\(\psi \, +, \, \, \, \, \, \, \, \, \) . As these latter were taken up individually in preceding sections, they were shown to have some feature which required that they be written and these features are what

characterized them as a class of fixed phonemes. However when registers, pitch levels, and degrees of pause were discussed they did not exhibit any of the features of the fixed phonemes or any feature which required them to be written, and which couldn't be called expressive. They had such a variability of occurrence and co-occurrence with each other and other features without apparent grammatical or lexical (non-expressive) significance that they couldn't be classed with any of the fixed phonemes. Therefore they are classed as free phonemes. 7.8 In 7.8, 20 examples are given to phonemicize [V], contour stress, [^] and registers. Also, here, more of the phonetic nature of registers are discussed.

There is a pitch-stress feature which may or may not occur within contours. When it does occur the general pitch of the total contour within a given register, can be predicted. This is marked as $[\vec{V}]$. It never occurs initially or finally but always medially in a nonfalling contour. Otherwise by marking register types and not $[\vec{V}]$, different total pitch contours may be predicted much simpler and more accurately. Predictions of total pitch for contours will now be given. I should emphasize that no individual pitch levels can be predicted with or without notation. There is too much variation of pitch level in connected speech.

7.8.1 In contours in which only one $[\mathring{\mathbf{V}}]$ or $[\ddot{\mathbf{V}}]$ occurs, (can't tell which here), and no $[\mathring{}]$ occurs, of course, the general pitch to the right and left of $\ddot{\mathbf{V}}$ is low. Every contour has at least one $[\mathring{\mathbf{V}}]$. No contour had only one $[\mathring{\mathbf{V}}]$ finally, but one $[\mathring{\mathbf{V}}]$ initially occurs in LF. (See ahead for LF) The minimum number of syllables in which only

characterized them as a class of fixed phonemes. However when registers, pitch levels, and degrees of pause were discussed they did not exhibit any of the features of the fixed phonemes or any feature which required them to be written, and which couldn't be called expressive. They had such a variability of occurrence and co-occurrence with each other and other features without apparent grammatical or lexical (non-expressive) significance that they couldn't be classed with any of the fixed phonemes. Therefore they are classed as free phonemes. 7.8 In 7.8, 20 examples are given to phonemicize [V], contour stress, [^] and registers. Also, here, more of the phonetic nature of registers are discussed.

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one $[\tilde{V}]$ occurs medially is four. (All registers are marked except normal.)

la: LR [1 tunyl gwllcietlk? 3] they stretched it, 7C, p. 4;

1b: [1 tuput lmcck 3] they put the hide over a pole, 7C, p. 2;

1c: HR [1 nyl hancltlk 3] when they do it again, 7C, p. 1.

If, in a H, N, L, contour, at least one $[\bar{V}]$ occurs and other [V] occur, the pitch to the left and right of $[\bar{V}]$ is low, with $[\bar{V}]$ the highest point of the contour, with the following exceptions: A sequence [V] or $[\bar{V}]$ to a high rising or high pitched final vowel (i.e., before pause) is low until this final vowel when the pitch rises to a height which can be as high as $[\bar{V}]$. $[\bar{V}]$ is always the highest point in a contour. This final rise may or may not be held. From a [V] or [V] to a final low or low falling or high falling pitched vowel there may be a fall in non-falling contours which may start as far back as 4 syllables from the final vowel. The pitch prediction from [V] or [V] to [V], say, may or may not occur, and may or may not occur with $[\bar{V}]$. Examples of a contour shape with a $[\bar{V}]$ as

2a: HR $[[\bar{J}]$ kam winawi. ma? akkita $[\bar{J}]$ what do you want to do that for?

JI, p. 2; 2b: HR $[[\bar{J}]$ benya with $[\bar{J}]$ my man, JI, p. 1

Another example of a contour shape with one $[\bar{V}]$ as $\lambda a, b$: $\lambda a: [1 \text{ bunya witeyem 1}]$ my man, JI, p. 1.

An example of this same type with a fall on the final high pitch vowel

3b: [2 0 ln + ssltd HR yd?pe:nkyu mby] he was the only one alive.

An example of a contour with one $[\bar{V}]$ with falling pitch on the last 4 syllables with a final fall as

one $[\hat{V}]$ occurs medially is four. (All registers are marked except normal.)

la: LR [1 tunyl gwilciətik?] they stretched it, 7C, p. 4;

lb: [1 tuput, lmcck 3] they put the hide over a pole, 7C, p. 2;

lc: HR [1 nyl háncltlk 3] when they do it again, 7C, p. 1.

If, in a H, N, L, contour, at least one $[\vec{V}]$ occurs and other $[\vec{V}]$ occur, the pitch to the left and right of $[\vec{V}]$ is low, with $[\vec{V}]$ the highest point of the contour, with the following exceptions: A sequence $[\vec{V}]$ or $[\vec{V}]$ to a high rising or high pitched final vowel (i.e., before pause) is low until this final vowel when the pitch rises to a height which can be as high as $[\vec{V}]$. $[\vec{V}]$ is always the highest point in a contour. This final rise may or may not be held. From a $[\vec{V}]$ or $[\vec{V}]$ to a final low or low falling or high falling pitched vowel there may be a fall in non-falling contours which may start as far back as 4 syllables from the final vowel. The pitch prediction from $[\vec{V}]$ or $[\vec{V}]$ to \vec{V} , say, may or may not occur, and may or may not occur with $[\vec{V}]$. Examples of a contour shape with a $[\vec{V}]$ as

2a: HR $[\vec{J}$ kom winawi may read to you want to do that for?

II, p. 2; 2b: HR $[\vec{J}]$ bonya with $[\vec{V}]$ my man, JI, p. 1

Another example of a contour shape with one $[\bar{V}]$ as $\lambda a, b$:

3 a: [1 bányə witsysm 1] my man, JI, p. 1.

An example of this same type with a fall on the final high pitch vowel as

3b: [201n+ as Ita HR ya?pe:nkyu may] he was the only one alive.

An example of a contour with one $[\bar{V}]$ with falling pitch on the last 4 syllables with a final fall as

4a: LR [2 yû?pē·nkyû lm+iclk] he is alive she said,

An example of a contour shape with [V] as

5a: LR [] kam winawi m makkata] what do you want to do that for?

JI, p. 2.

An example of a contour shape with two [V] as

(For sources for examples here, see section on registers.)

6a: HR [1 kavayū: 4ūjyū: 1] I don't know how old;

In general the syllables closest to the first juncture are heard lower

6b: LR [1 kavyūk yūkiyú:h 2]

than those nearer the final pause. This is especially true of 5a and 2a. 7.8.2 In contours in which no $[\overline{V}]$ occurs and more than one $[\hat{V}]$ occurs, the pitch pattern is that of the register and that described by the rises and falls of unstressed and stressed syllables. Examples of these with final rise are:

7a: HR [Earl monyomae w nyoyuk] Earl's mother like that, JIII, p. 4;

7b: LR [3 panyə tay nyayuk 3] my dead father like that, JIII, p. 4:

; a contour with no \overline{V} and final fall is:

7c: LR [3 héə páyə miyæ wlc] she pulled her dress up high, Buff,

7a and 7b are spoken directly after one another in the text. They are delivered in a way very common and characteristic of Havasupai narrative speech. I can only describe it as a sort of 'machine-gun' type of delivery, in which there is a special emphasis (but not emphatic stress) on all primary stressed syllables. It seems to be a vocal qualifier of emphasis.

4a: LR [2 yth?pē·nkyth lm+iclk] he is alive she said,

An example of a contour shape with [\bar{V}] as 5a: LR [3 kam winawi m məakatə 3] what do you want to do that for?

JI, p. 2.

An example of a contour shape with two [V] as

(For sources for examples here, see section on registers.)

6a: HR [1 kavayū: yūhiyú: 3] I don't know how old;

6b: LR [1 kavyūk yūkiyú:h 2]

In general the syllables closest to the first juncture are heard lower than those nearer the final pause. This is especially true of 5a and 2a. 7.8.2 In contours in which no $[\tilde{V}]$ occurs and more than one $[\tilde{V}]$ occurs, the pitch pattern is that of the register and that described by the rises and falls of unstressed and stressed syllables. Examples of these with final rise are:

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7.8.3 In falling contours, if $[\bar{V}]$ occurs non-initially and no other $[\bar{V}]$ occurs and [V] also occurs medially there is one peak throughout a fall. to pause, If $[\bar{V}]$ occurs initially and no other $[\bar{V}]$ but [V] occurs to pause the pitch is also falling to pause with one initial peak. If no $[\bar{V}]$ occurs and [V] occurs initially and other [V] occur medially, there is a rise and fall throughout a fall. If no $[\bar{V}]$ occurs and only one [V] occurs initially there is a fall to pause. If no $[\bar{V}]$ occurs and [V]s occur non-initially, there is an up and down pattern in a fall to pause.

An example of the first case is:

8a: NF [3 kmavlm+ɛvlnyu 3] he tells it, I heard it, JI, p. 5;

An example of the second type is:

9a: [1 weny mixe 1 ice 3] I guess they mean hair on the body, Buff, p. 14.

An example of the third type is:

10a: NF [1 icolk Inya nyuvwik 2] they said that, DWII, p. 7,

An example of the fourth type is:

11a: NF [1 0ihikw! 3] they will drink, S.R., p. 14.

An example of the fifth type is:

12a: NF [2 kak+yúat toún m² gayúm 3] it happened that way or something like that, Buff, p. 5,

7.8.4 N/ was set up as a phoneme in previous sections as a marker of certain bound features occurring at pause. All LF and NF contours, as these and other examples show, end in a phonetic fall which is similar to the fall characteristic of N/ as a marker of the bound features. By always ending in N/, falling contours are distinguished from non-falling contours. However, N/ may also occur with non-falling contours, i.e., when it is a marker of the bound features.

Therefore $/\sqrt{\ }/$, occurring in falling contours is bound to them and also predictable, if the contour register is marked. Now since it has been shown that the voiced counterparts of the voiceless features bound to pause may occur under the same pitch condition, when freely varying, i.e., de-acceleration and drop or fall to pause, and so may all the other features which freely varied, a drop and de-acceleration then is necessarily a feature of silent pause and $/\sqrt{l}$ is written wherever it occurs at pause. If $/\sqrt[4]{}$ is written for the features bound to pause, then, and if the free variants of these features occur under the same pitch condition, which, in turn, only occur at pause, ($\overset{3/6}{V}$, $\overset{2/6}{V}$), then $/\sqrt{/}$ must be written there and there is also a fixed phoneme. A substitution of any pitch for say, $\stackrel{3}{V}$, in /V/ finally, except when the features bound to pause occur, would not be ungrammatical, but a substitution of $\overset{3}{V}$, for any pitch medially would be. Since $/\!\!\!\! \sqrt{/}$ may now occur in H, N, L registers as well as being bound to falling registers, all registers must be written.

registers must be written.

It has been shown that V_{Λ} only occurs at pause. The refore this is bound to pause and must be written, $/ \uparrow /$. However all other pitches pause combinations except those for which $/ \psi /$ and $/ \uparrow /$ stand, are still free.

There is a type of sustained pause, which does not sound like hesitations, which may occur sigh rising or high Level. These are written with added length on the vowel before the sustained pitch and the level of pitch is indicated by the number of pitch. I don't know if these have any significance, grammatically or otherwise. They are the same kind of phonemes as $/\sqrt{\ }$ and $/\sqrt{\ }$, since they have the same substitution restrictions.

An example of high sustained is:

la: [3 gak haykú:v máttəm 1] before the white man, this land... S.R., p. 1.

An example of high level is:

lb: [I toum tohme m Itom 1] they never cured her but, JIII, p. 8.

7.9 In this section some notes will be given on the possible expressive function of register types. I do not know what role pitch plays in these examples or if pitch is the significant feature and register supplementary. All the following appear as examples in 7.1.1 as representative of register types. In these contrasts I add a paraphrase of the HR and LR contours that is supposed to convey the expressive lexical contrasts carried by the register. It is very possible that I am impressing on these 'contrasts' pitch patterns which I have associated with expressive significance in English. But I am sure this is not the case. These contrasts are so evident in the contexts in which they occur that if they do occur in English or in other languages, then they also occur in Havasupai. It would be a very dull person who couldn't apprehend the contrasts.

The first contrast is la and lb. These sequences occur immediately after one another in the same text. la, lb occurs in a text in which the narrator is telling a story of early Aplache raids on Supai village. The Apaches, the narrator says, would take women and children and throw them alive off cliffs. During such an act, in which her husband's mother was the intended victim, the narrator says that people asked: What do you want to do that for? The paraphrase for the HR, la, I take to be is--It's unbelievable you would do such a thing--

An example of high sustained is:

la: [3 gak haykú:v máttəm 1] before the white man, this land... S.R.,

p. 1.

An example of high level is:

18: [I toum tolume mItom 1] they never cured her but, JIII, p. 8.

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and for lb, LR, as a resigned--Such a terrible thing--. In la there are other expressive features: la is faster and tenser than lb and the final syllable is especially fortis. lb, by contrast is slower and quite lax. This is the only occurrence of fast speech which appeared significant in any way, or which I could pin down as such. I do not give fast speech phones or slow phones because I think that whatever may occur in fast speech may occur in slow. The speed of speech does not condition phones consistently in any way. Any sporadic differences are conditioned by selection.

2a, 2b occur in different texts but with the same informant as la, lb and 2b occurs in the context of a sequence of normal registers in which, as a HR, it is outstanding. In the text in which 2b occurs, the narrator is giving lists and telling of the many people who died in a measels epidemic many years ago. The narrator is listing all the people who died and suddenly breaks out into the HR translated as He was the only one alive. This is paraphrased by me as-How did he do it? (in a kind of wonder.) There is a vocal qualifier here, I think, of a kind of sing-song or chant effect overlaid on the HR.

2a, LR, is not distinctive where it occurs except by making more prominent 2b, but 2b is so prominent in the environment in which it occurs, 2a is really not necessary.

In the same text as 2a, 2b, 3a HR, 3b LR, 3c NR, contrast, and 3a and 3b almost directly follow each other. In this text the narrator, the same one for 1 and 2, is telling of something that happened long ago. In this text the HR also emerges from a sequence of NR. It is translated as That's right. The paraphrase is I'm not lying, I'm

really not lying—. This is really an assertive exclamation that what she has told thus far in the text is true. The vocal qualifiers for 3a is similar to 12—fast and fortis delivery. 3b and c in comparison are slower and more lax and, I guess, therefore, less assertive. It should be noted that the stresses in 3a are not emphatic—not as forceful as emphatic stress.

The last contrast is from the text of a different narrator.

They are examples 5a, HR and 5b, LR. They occur three pages apart, but again the HR occurs suddenly in a sequence of NR. The narrator is telling of his younger days and, trying to remember how old he was at a certain time, the HR occurs. It is translated as: How old was I? It is paraphrased as a ruminating-Let's see, how old was I--. This HR in 5a has the same sing-song or chant effect overlaid on the HR as did 2b.

A final contrast is 7a, 7b in an enumerative sequence. The narrator, the one for 1, 2, is listing the people who died in the measels epidemic and the lengthy list is ended with this HR, LR contrast which follow each other. The combined contrast is paraphrased as—almost everybody died—.

8. In 1, minimal pairs for citation forms for all C and V phonemic norms were given. In this section, sub-minimal contrasts taken from texts of connected speech will be given for consonants and semiconsonants as to manner and point class and for all vowels.

Sub-minimal contrasts for all consonants and semi-consonants are, in the majority of examples, in the environment of an open syllable with one C or SC where the quality, length and stress of the V and the position of the syllable with respect to the contour and the word is constant for each sub-minimal contrast.

After all the contrasts for a particular manner class are given the allophones of each norm in that manner class will be discussed.

In a presentation of this kind where the phonemic status of a given phone is usually indicated by 1 or 2 sub-minimal examples, there is no guarantee that these examples are in fact representative of the many more contrasts which the linguist has in his corpus, but does not give for reasons of economy and simplicity in presentation; By 1 or 2 sub-minimal pairs, where only 1 or 2 features vary, 1 or 2 predictive rules could be formulated which could combine the phones in question into 1 phoneme. That 2 examples is a fair and statistically reliable sample, for proving 2 phones to be different, of the total contrastive population in all or some of the languages of the world has not yet been demonstrated. It is a fact that the more minimal an environment becomes the more patterned appear the rules for predicting phones. Therefore, 1 or 2 examples of good sub-minimal pairs would appear more likely to be representative of allophonic rather than phonemic distributions. Also, minimal pairs from citation may not appear

phonetically the same in connected speech. This was shown here particularly with regard to length. The only way to prove in the description itself, that certain phones are phonemes, is to present enough diverse examples showing that the rules needed to predict any phone would be too numerous and/or complex. However, since in sections 1-8, this was done with the supra-segmentals, it will not be done here. Following custom, a minimum number of 2 sub-minimal contrasts for each phonemic norm will be given here.

8.1. The only position in which all the stops occur is initially in the contour and the word in an open syllable before [i], [ə] and [d]. In no other environment do the stops have this uniformity of occurrence. Although all stops may occur initially, medially and finally in the contour, and as onsets of open syllables initially, medially and finally in the word, it is only initially in the contour where all of the stops occur under minimal conditions, with respect to the vowels in an open syllable. In other environments, there are restrictions as to the quality of vowel, stress and length upon individual stops not found initially in the contour, (cf. IPS 10 for this);

Environments in which at least 4 stops contrast in an open syllable are 1) initially in the contour and word; 2) medially in the contour and word before [i] and [i]; 3) finally in the contour and word before [i]. Contrasts for the stops [p, t, 2] are the hardest to find when they are not initial in the contour. Initially in the word and medially in the contour, and medially in the contour and word, though, they contrast before [e] and [e]. Only two contrasts for all stops will be given below: initially before [i] and medially before [i]. [p] does

phonetically the same in connected speech. This was shown here particularly with regard to length. The only way to prove in the description itself, that certain phones are phonemes, is to present enough diverse examples showing that the rules needed to predict any phone would be too numerous and/or complex. However, since in sections 1-8, this was done with the supra-segmentals, it will not be done here. Following custom, a minimum number of 2 sub-minimal contrasts for each phonemic norm will be given here.

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not occur medially before [I] so additional contrast of [p, k, c, ?] before [I] medially, [p, q] before [E] medially and [p, t] before [E] initially will be given. In these contrasts, differences of free phonemes in any environment is not considered significant, only pitch, degree of pause and free length is written for ease of presentation.

8.1.1 The following examples describe the allophones V and C segmental phonemes and justify these phonemes in Havasupai by presenting all the environments in which these phonemes sub-minimally contrast in the corpus. (See 8. for further explanation of the amount of examples.)

All stops contrast initially before [i]: [l pit, = +niiiu:jlk]

/ pit, = +nyiyu:cik // Only those things PD (LS) p. 9; [l tit]:tlk l]

/ titi:tik // They level it up DWT2 p. 7; [2 cicemávlk 3] // cicemávik //

They cleaned it up DWT2 p. 1; [l kica hamá:t 2] // kica hamá:t //

I think they do 3J, p. 9; [l qi+nllmsáve hán tâvjlm 3] // qi+nyimsáve

hán tâvcim // Very pretty white woman Buffalo p. 4; [l ?iclkEH 3]

/ iciksh // They said it 9Ja, p. 3;

- 8.1.2. All stops but [p] contrast medially in the word and contour before [i]: [l huatl+kiu 3] / hwati+kyu / It's going to be red

 8C p. 4; [l nia æ:klca l] / nyaé:kica / They put me in jail C.A.

 p. 10; [l hua·ljlm -ui:cl+kuEH l] / hwa·lcim -wi:ci+kwsh / They always plant HS.PD. p. 3; [2 clallia·ivlnj l] / ciailia·yvinc / Plants like wood Jl p. 8; [l vak +nia va?ltlkh 3] / vak +nya va?itikh / I arrived here IC p. 5;
- 8.1.3. Contrasts of [p, k, c, ?] before [i] medially in the word and contour: [liapitlk 2] // yapitik // It was only us PD p. 8; [licoki+niə l] // icoki+nyə // They said that DWT2 p. 7;

[2 tu +kués klcícuv]] / tu +kwés kicícuv // They steal things

PW p. 14; [1 uûk - iu?íclk vó·clm +miúclk]] / wûk - yu?ícik vó·cim

myúcik // They got here and stayed and they always went back home

4C p.];

8.d.4. Contrasts of [p, q,] medially in the contour and word: [2 kués tlpéuok 1] / kwés tipéwok // I packed for him LS p. 12; [1 hovsuup hmá: nie sqéclm 1] // hovsuwo hmá:nye sqécim // Small supai boys PW p. 11;

Contrasts of [p] and [t] medially in contour and word are:

[2 tû lú:+nik cipét lk 2] // tû yú:+nyk cipét ik // They are just drunks

PW p. 12; [2 katetûl pánja uík pá+nja uá:m 2] // katetûl pá+nya wík

pá+nya wá:m // They put us in the wagon and took us there DWT2

p. 18;

This gives 2 sub-minimal contrasts for all stops except [t] and [t].

In 8.1.2. contrasts of all stops but [p] before medial [1] were given. All stops contrast with [t] in this position: [2 pat leahttaum 2] // pat icah taum? It is hard 3P p. 9; [t] never occurs before ['] in a closed or open syllable and never occurs initially in the contour of the word.

Finally in the word and medially in the contour [t,] contrasts

before [a] with all stops but [p]: [3 kúta gávl+niiiú:c l] // kúta

kávi+nyiyúc // It was not like that BS p. 10; [l niu as lta l+niúvlta l]

// nyu asíta i+nyúvita // This is the only one LS p. 20; [3 iuca+kůdoo

vá:m] // yúca+kyútoa vá:m // They used to but now ... 4C p. 4.

[1 gákə spó: távə təú·m -yît 2] // kákə spó: távə təú·m -yît //
I really don't know Buffalo p.33; [2 səlogə mî +gueə gakucl+ni.ûm 2]
// səloqə mî +kwéə kakúci+nyûm // It's jelly from the spine-bone or
something like that Jl p.); [1 nilmi.?ə homá.i 2] // nyimi.?ə
homá.y// The sons of Lion p. 9 Buffalo;

Two examples of [t] and [p] contrasts are finally in the word and contour before [s] in an open syllable and before [l] in a closed syllable.

[2 niæ. tqéps l] / nys. tqéps // At night Jl Pl; [2 6 m +? éplm 3]

// 6 m +? épim // They came up there then. Buffalo p. 2; [l hal tahá: ts l] / hal tahá: ts l] / hal tahá: ts l/ I worked there LS p. 12; [3 kú:t lm 2]

// kút im // Far away p. 3 2 BS;

[p] freely varies with [b] initially in the word and contour, medially in the contour and initially in the word, and medially in the

contour and word. Only [p] occurs finally in consonant clusters and before [N], In the contour and word, and in all other environments [p] and [b] freely vary. They do not occur before [+1]. For free variants see underlined examples, under voiceless stops and then also under voiced stops for corresponding variant. [p] [2 púi θα cáti 3] / pui θα cáti 🏞 They almost got killed there. CA p. ll; [l pácuc -uayók 2] /4 pácuc wayók // We all lived there. 4C p. 4; [1 kak pát a taó:p 3] / kak pát a taó:p 7/ It is hard. 4C p. 7; (this is [p] initially in word, medially in the contour and finally in the contour unreleased.) [I hopdcom 1] / hopdcom // Four 4C p. 6; [1 clmpæ.ulk 3] / rcimpe.wik / Kidneys Buff. p. 14; [3 uæl 0ədapm 1] / wəl 0ətapəm 7/ 5 lived there. BS p. 2; [l njandopm-jó·clk l] / nyantópəm -yó·cik 4/ They picked them at sundown. 6C p. 7;. ([p] is in complementary distribution with [b] in these last two examples.) [b] [l bui+kû iclm+icə?3] / pui+kyû icim+ice? 1/ They died, they said 2J p. 1; [1 kak bat a taum miclm] // kak pat a taum micim // It is hard. HSI p. 14; [2 ba+nia taiv 1] // pá+nya táyv // My (dead) father. Jp. 11; [l hobá+niə paiú·jlt pâ ui:c 2] / hopá+nyə payú·cit pa wi:c / 4 people of the Paiutes died 2J p.3;

[t] and [d] freely vary in all environments in which [p] and [b] do. No free variants for [t] and [d] have been found initially in the word and contour, although these have been found initially in the word and medially in the contour. [t] and [d] in addition, freely vary in consonant clusters and before [+1]. See 8.1.6. for [t] and [d] before [N].

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[t] [2 tu zeó:pca távə 2] /† tu əɔ:pca távə // We are hopeless. BS

p. 28; [2 kat:till pá+ni púclm 1] // kat:till pá+ny púcim // They

put us all on the train DWT p. 10; [3 cat 1] // cat // Years DWTI

p. 5; [3 ta.thá:tə 1] // ta.thá:tə // They worked LS p. 2;

[l til?tl+nilt+lú:jɔ 1] /† til? ti+nyīt+ú:cɔ f/ At school BJ p. 9.

[d] [3 gak spɔ+niə dávə 1] // kak spɔ+ny távə // I really don't

know J12 p. 4; [2 uaió·k tu kad:till 1] // wayɔ-k tu kat:till // We were

riding in wagons or trains. DWTI p. 3; (If you will compare this

example with its variant under [t], the [é] is short here but long there.

Length has been shown to be expressive in connected speech in 5.,

and therefore cannot be considered a conditioning factor.)

[3 nilce call 1] // nyice cat // We stayed there many winters or years

IC p. 4; [2 gués tadhá:djə dav 1] // kwés tathá:tcə tav // Just the

workers 4C p. 4; [2gak nild+lúk 1] /† kak nyit+úk // School was out

IC p. 3.

[g] and [k] freely vary initially and medially in the contour and word. Only [k] occurred before [+1], in consonant clusters and finally in the contour. In sequences with /w/ and /y/, however, [g] and [k] freely varied. [k] and [g] did not occur before [N].

[k] [3 kɔ́ləúik 3] / kɔ́ləwík // They worked it 7C p. 2; [3 hóm kak hatávə 1] / hóm kak hatávə // At that time there was no whiskey.

DW p. 11; [1 tikápuh 1] / tikápuh // They gathered there. 3J p. 11;

[3 uaksí:+niə ləuík 1] / waksí:+nyə ləwík // Like cattle BS p. 1;

[3 hak+ló:vmlk 3] / hak+ló:vmik // He threw her down. BS p. 7;

[1 səktó:pon niuk vínlmák 1] / səktó:pon nyuk vínimák // They left us at the fork. PW p. 20; [3 kuéə gajúik 2] / kwéə kayúik //

[t] [2 tu æó:pca távə 2] /† tu əɔ:pca távə // We are hopeless. BS

p. 28; [2 kat:tîtî pá+ni púc lm 1] // kat:tîtî pá+ny púc im // They

put us all on the train DWT p. 10; [3 cat 1] // cat // Years DWTI

p. 5; [3 ta.thá:tə 1] // ta.thá:tə // They worked LS p. 2;

[1 ta?tl+ni [t+lú:jɔ 1] /† ta.thá:tə // At school BJ p. 9.

[d] [1 gak spɔ+niə dávə 1] /† kak spɔ+ny távə // I really don't

know J12 p. 4; [2 uaió·k tu kadital 1] // wayɔ·k tu katital // We were

riding in wagons or trains. DWTI p. 3; (If you will compare this

example with its variant under [t], the [i] is short here but long there.

Length has been shown to be expressive in connected speech in 5.,

and therefore cannot be considered a conditioning factor.)

[3 nilci cad 1] // nyici cat // We stayed there many winters or years

IC p. 4; [2 guéə tadhá:djə dav 1] // kwiə tathá:tcə tav // Just the

workers 4C p. 4; [2gak nild+lúk l] /† kak nyit+úk // School was out

IC p. 3.

[g] and [k] freely vary initially and medially in the contour and word. Only [k] occurred before [+1], in consonant clusters and finally in the contour. In sequences with /w/ and /y/, however, [g] and [k] freely varied. [k] and [g] did not occur before [N].

[k] [3 kələuik 3] / kələwik // They worked it 7C p. 2; [3 ham kak hatavə 1] / ham kak hatavə // At that time there was no whiskey.

DW p. 11; [1 tikapuh 1] / tikapuh // They gathered there. 3J p. 11;

[3 uaksi: +niə ləuik 3] / waksi: +nyə ləwik // Like cattle BS p. 1;

[3 hak + la: vm lk 3] / hak + la: vm ik // He threw her down. BS p. 7;

[1 səkta: pon niuk vin 1 mak 1] / səkta: pon nyuk vinimak // They left us at the fork. PW p. 20; [3 kuéə gaiuik 2] / kwéə kayuik //

Something happened Buffalo p. 32; [3 hal nilt+lu:clm miu·clk kiucθoh l]

/ hal nyit+tu:cim myu·cik kyucθoh l/ They used to go to school there.

BS p. 4;

[g] [l gələuijlk l] / kələwicik / They worked it. 7C. p. 4;
[3 vá:m gαk 2] / vá:m kαk / Not now 8C p. l; [l pαtek tigápmh 2]
/ pα tek tikápəmh / Many people gathered. 3J p. ll;
[2 iúclk giúcθοh vám l] / vúcik kyúcθοh vám / I think that now
BS p. 2; [2 guéə má:t 2] / kwéə má:t / They dressed it Buffalo
p. 22.

[c] and [j] freely vary initially and medially in the contour and word and finally in the contour. Only [j] occurs after all voiced C or SC in a consonant cluster medially in the contour. Only [j] occurs finally in a consonant cluster. [c] and [j] freely vary in the environment of a voiceless C, [N] and [+1]. In one sequence [s] varied with [c]. This will be starred.

[c] [3 cəθúlôk 1] / cəθúlôk / He washes her 8C p. 7.

[l nia ul·cl niûv l] / nya wi·ci nyûv / It belongs to us SR p. ll;

[l lmɔi +lîm +liclm l] / lmɔy+îm+icim / I guess they said it

LS p. 6; [2 tu kuéə ka+viúc 2] / tu kwéə ka+vy-uc / They did things

LS p. 1; [3 kút tôv qe·ctəm 3] / kút tôv qe·ctəm / Long ago when

I was small 3J p. l; [3 iúcn niútch l] / lyúcən nyútch / I wish we

were that way BS p. 21 *[1 šlpóm l] / lcipóm / They got out 4C

p. 4; [2 clpák 2] / lcipák / They got out IC p. 3; [3 ga ic+imɔm l]

/ ka ic+imɔm / Some kind of thing 5C p. l.

[j] [1 jəθúlk 2] / cəθúlk / They washed 8C p. 12; [1 uiji ilt 3]

/† wici yît †/ They owned it LSPD p. 6; [3 isjlm 2] / yscim 1/

They got it 70 p. 9; [2 tu ka+viúj l] // tu ka+vyúc // They
just do anything BS p. 10; [3 phái viia·jmi i:iít 3] // pháy
viyá·cmi i:yít 1/ Many people went but... Buffalo p. 1;
[3 pam krðatrnj l] // pam kiðatrnc // Male coyote Buffalo
p. 20; [3 qé:jtem 2] // qæ:ctem 1/ When I was small LS p. 1;
[1 nii+viújn nie l] // nyi+vyúcen nye 1/ It was like that
PDLS p. 4; [1 miúj +1 moi 1] // myúc+imoy // Something was
there PW p. 21;

[q] varies freely with [x] initially in the contour and word and with [x] and [x] initially in the word and medially in the contour. There was no voiced [q] and no other allophones.

[x, x, x,]: [l xé·ccm nil ta·ik nilhanîm 3] / qé·cim nyitá·yk nyihânim 7/ It was good it got a little bigger. DWTI p. 6;

[l nil xá@em l] // nyi cá@em // It calls me CA p. 8. (There are no other examples of this morpheme in texts, but in citation this morpheme is /cá@ke/ To call someone.) [3 the xé·jcm l]

// the qé·cim // Just a little 9J. p. 1.

[q]: [l qé·cim má:+nillam 3] // qé·cim má:+nyilum // When it gets a little soft 13J p. 2; [3 va qé·cim 1] // va qé·cim //

Get a little of it. ES p. 39; [q] occurred finally in the contour: [3 @ak -ua:q 2] // @ak -wa:q 1/ They started running there Buffalo p. 26.

[?] freely varried with Ø initially and intervocalically. In final position in the word [?] and Ø freely vary. Only in final position in word and contour did [V?V] occur. [l icol ma:t 2] / icol ma:t 4/ I think they said it Buffalo p. 29;

They got it 70 p. 9; [2 tu ka+viúj 1] // tu ka+vyúc // They
just do anything BS p. 10; [3 phái viia·jmi i:iít 3] // pháy
viyá·cmi i:yít 1/ Many people went but... Buffalo p. 1;
[3 pám kưθátínj 1] // pám kiθátínc // Male coyote Buffalo
p. 20; [3 qé:jtem 2] // qé:ctem 1/ When I was small IS p. 1;
[1 nii+viújn nie 1] // nyi+vyúcen nye 1/ It was like that
PDIS p. 4; [1 miúj +1 moi 1] // myúc+imoy // Something was
there PW p. 21;

[q] varies freely with [x] initially in the contour and word and with [x] and [X] initially in the word and medially in the contour. There was no voiced [q] and no other allophones.

[x, X, x,]: [l xé·cum nii ta·ik nithanîm 3] / qé·cim nyita·yk nyihânim 7/ It was good it got a ligtle bigger. DWTI p. 6;

[l nii xá0em l] / nyi çá0em // It calls me CA p. 8. (There are no other examples of this morpheme in texts, but in citation this morpheme is /qá0ke/ To call someone.) [3 the xé·jum l]

// the qé·cim // Just a little 9J. p. 1.

[q]: [l qe·cim má:+niilam 3] // qé·cim má:+nyilum 7/ When it gets a little soft 13J p. 2; [3 va qé·cim l] // va qé·cim //

Get a little of it. BS p. 39; [q] occurred finally in the contour: [3 0ak -uá;q 2] // eak -wá;q 1/ They started running there Buffalo p. 26.

[?] freely varried with Ø initially and intervocalically. In final position in the word [?] and Ø freely vary. Only in final position in word and contour did [V?V] occur. [1 1001 ma:t 2] / 1001 ma:t 1/ I think they said it Buffalo p. 29;

[3 gak háne teò.p 2] / kak háne teò.p 1/ It is not good
Buffalo P. 9; [1 ?ic.ki 'm+ij 3] // ?iciki 'im+ic.// They
always said it 3J p. 2; [1 kak hána te?o.p 2] // kak hána
te?o.p 1/ It is not good Buffalo p. 12; [2 waksi slók 1]
// waksi slók v/ Jelly from the spine of a cow 7C p. 3;
[2 waksi? c.vso? 3] / waksi? civso? 7/ Cow's rib 7C p. 1;
[3 wik—waksi?i l] // wik—waksi?i v/ Give them cows 9JA
p. 1; Since [?] contrasts with other stops, as shown above,
it is written when it occurs.

The following note on "long stops" should properly be put in the morphophonemics section. I am including it here because there was some noise about phonemic long stops in the Pay Languages. As a morphophonemic alternation, this would be classed in Havasupai as a free variant alternation. For definition of this type of alternation, see 9.

The so-called long stops are free variants of the sequence [S[~e]+S[~e]]. Length most frequently occurs with [c] initially and medially. Examples of this free variation will be illustrated only through [c]. A long stop phonetically is written [S·] below. Phonemically it is written /SiSi/: [2 guev il niipu·cicik 2] / kwévil nyipu·cicik // They put them one by one in a sack there 6C p. 9-10. [l eal pu·c·cm 2] / Peal pu·cicim // They put them one by one in a sack there 6C p. 10; [l ha·v tai cicikiiætik niûk 2] // ha·v tay cicikiyétik nyûk // They cut up the big cottonwood trees there one by one 5C p. 6; [2 cic·ná·m niuk suvkócik 3] / r ciciná·m nyuk suvkócik 7/

[3 gek háne teo.p 2] / kak háne teo.p 1/ It is not good
Buffalo P. 9; [1 ?ic.ki 'm+ij 3] // ?iciki 'im+ic // They
always said it 3J p. 2; [1 kak hána te?o.p 2] // kak hána
te?o.p 1/ It is not good Buffalo p. 12; [2 waksi slók 1]
// waksi slók // Jelly from the spine of a cow 7C p. 3;
[2 waksi? c.vso? 3] / waksi? civso? 7/ Cow's rib 7C p. 1;
[3 wik—waksi?i l] // wik—waksi?i // Give them cows 9JA
p. 1; Since [?] contrasts with other stops, as shown above,
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[2 guev:l niipú·cícik 2] / kwévil nyipú·cícik // They put them one by one in a sack there 6C p. 9-10. [l eal pú·c·cm 2]

// eal pú·cicim // They put them one by one in a sack there
6C p. 10; [l ha·v taí cícikiiétik niûk 2] // ha·v tay cícikiyétik nyûk // They cut up the big cottonwood trees there one by one
5C p. 6; [2 cíc·ná·m niuk suvkócik 3] // cíciná·m nyuk suvkócik //

They sewed it piece by piece and put it over the door there. 50 p. 6.

The [c.] in question here in the first example is a sequence of -ci, phural actor and distributive goal -ci suffixes which occur in sequence and contract to [c.] in some occurrences. In the second and third examples, ci-ci are sequences of formative and plural goal distributive prefixes. The plural goal distributive is lengthened when the vowel is elided.

Length with consonants is expressive of intensification:

[l váppe: 3] / Lváppe: L/ (real) later DWT2 P. 2a. [3 vápe: 2]

// vápe: L/ Later DWT2 p. 4.

8.1.6. It is apparent that the majority of the rules for the voiced and voiceless allophones of the norms /p, t, c, k,/ are free variation. I have given examples for each norm to show where these variations take place. However, only one example was given for each environment. There are instances where in the same environment the same voiced and voiceless allophones occur, but not in the same morpheme, and for these instances, I have no free variation in the same morpheme in the corpus, and therefore the phones contrast there. (see 9.3 for similar and more thorough treatment of this case with the vowel allophones.) To illustrate this, I will take 5 examples from [t] and [d] as representative.

They sewed it piece by piece and put it over the door there. 5C p. 6.

The [c.] in question here in the first example is a sequence of -ci, phural actor and distributive goal -ci suffixes which occur in sequence and contract to [c.] in some occurrences. In the second and third examples, ci-ci are sequences of formative and plural goal distributive prefixes. The plural goal distributive is lengthened when the vowel is elided.

Length with consonants is expressive of intensification:

[1 váppe: 3] / váppe: L/ (real) later DWT2 P. 2a. [3 vápe: 2]

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8.1.6. It is apparent that the majority of the rules for the voiced and voiceless allophones of the norms /p, t, c, k,/ are free variation. I have given examples for each norm to show where these variations take place. However, only one example was given for each environment. There are instances where in the same environment, the same voiced and voiceless allophones occur, but not in the same morpheme, and for these instances, I have no free variation in the same morpheme in the corpus, and therefore the phones contrast there. (see 9.3 for similar and more thorough treatment of this case with the vowel allophones.) To illustrate this, I will take 5 examples from [t] and [d] as representative.

Two rules I gave for [t] and [d] are that they freely vary in consonant clusters and before [N]. I gave one example of these. There are instances, though, of occurrences of [t] and [d] in clusters in morphemes and before [N] for which I have no examples of free variation: [l tadvol lyak 1] Hospital PB p. 2; [2 guée kévtáim 3] Figs 6C p. 1; [3 mátnniú:k kuaiók 2] We lived at driftfence 3J p. 1; [1 pátim hém Gevdiuucók 1] They made a hole on top 5C p. 4; [2 uiduidnnic TKHH 3] When they finished 13J p. 2.
8.1.7. For fricative contrasts, all environments below, unless otherwise noted, are in an open syllable under primary stress with a short vowel.

[0] and [h] minimally contrast with [v] initially in a closed syllable. In this particular sequence [0] and [h] freely vary. Also [0, h, v] minimally contrast here with the fricative stop [c]: [2 9ak 2] /7 9ak 1/ Over there Buffalo p. 38; [l hak 2] /7 hak 1/ Over there BS p. 8; [3 vak 1] / vak 1/ Over here Buffalo p. 38; [l cak 2] // cak 1/ They put something on him 8C p. 2.

[0, h, v] sub-minimally contrast initially in the word and medially in the contour before [o]: [l cakci:k Ooténi l] / cakci:k Ootény // They step on her arms CA p. 8; [3 k. Oá·t homé: 3] / ki Oá·t homé: 1/ Sons of coyote Buffalo p. 15; [2 hal voguá:c l] / hal vokwá:c // Thats what they talk about in there PDLS p. 5:

Only [v] and [h] occurred finally in the contour:

[l ia k túckv 2] / yak túcuv // Almost right here BS p. 29;

[3 touik téh 2] / towik túh // Just some of them 50 p. 11.

[s] and [6] occurred finally in the word but medially in the contour in just one morpheme: [2 piés +nit tá·im 1]

/ pés nyitá·ym // Lots of money PW p. 10. (This is possibly the only morpheme in the language in which [s] occurs finally and it is a Spanish loan of peso money.) [l pie cátokí+nieh 2]

/ pie cátokí+nyeh // She almost died 3J p. 1.

The only environment in which all the fricatives contrast, is medially before [a] and initially in the word and contour before the same vowel. They contrast with [c] in these environments: medially: [H isəkɔiə+ scæ·ni l]

// isəkɔyə+ scæ·ny // Fence-posts DWT2 p. 2;

[1 vavəiu·cik 3] // vavəyu·cik 1/ Just like that ISp. 17;

[2 ci+gui@əvəv 2] / 7ci+kwi@əvəv // They wrestle FDLS p. 3;

[2 bahəmôk 2] // pahəmòk 1/ They throw something wet on it

5C p. 4;

initially: [1 sə+kuacik 2] // sə+kwacik 7/ They put it there

8C p. 1; [2 @əpal taəik 3] // @əpal taəik 7/ They dry the

peaches PDLS p. 9; [1 vəju: ici ieik 2] // vəyu; ici ieik/

It happened suddenly DWT1 p. 10; [2 həmük 2] // həmük 1/

Three BS p. 36; [1 cə+guəm 1] // cə+kwam 1/ They piled it on

5C p. 4.

Only [v] and [h] occurred finally in the contour:

[l ia k túckv 2] / yak túcuv // Almost right here BS p. 29;

[3 touik téh 2] / towik túh // Just some of them 5C p. 11.

[s] and [0] occurred finally in the word but medially in the contour in just one morpheme: [2 pies +nit ta·im 1]

// pes nyita·ym // Lots of money PW p. 10. (This is possibly the only morpheme in the language in which [s] occurs finally and it is a Spanish loan of peso money.) [l pie catoki+nish 2]

// pie catoki+nysh // She almost died 3J p. 1.

The only environment in which all the fricatives contrast, is medially before [e] and initially in the word and contour before the same vowel. They contrast with [c] in these environments: medially: [H isəkɔiə+ sce·ni 1]

/ v isəkɔyə+ sce·ny // Fence-posts DWT2 p. 2;
[l vavəiú·cik 3] // vavəyú·cik // Just like that LSp. 17;
[2 ci+gui@əvəv 2] / rci+kwi@əvəv // They wrestle FDLS p. 3;
[2 báhəmôk 2] // páhəmôk // They throw something wet on it
50 p. 4;
initially: [l sə+kuacik 2] // sə+kwacik // They put it there
80 p. 1; [2 @əpal ta@ik 3] // @əpal ta@ik // They dry the
peaches PDLS p. 9; [l vəjú: ici l@ik // It happened suddenly DWT1 p. 10; [2 həmûk 2] // həmûk //
Three BS p. 36; [l cə+guam 1] // cə+kwam // They piled it on
50 p. 4.

[s, v] contrast initially in the contour and word before [L] and [s, v, 0] contrast in the same environment in the contour before [L]: [2 sikeué: +kui L+niá: m l] // sikewé: +kwi i+nyá: m l/ It turned back over on the road CA p. 5; [2 v/se?oje táve 3] // vise?oce, táve 1/ They watched it closely DWTI p. 4; [1 siiá: vik l] // siyá: vik l/ It was on its side CA p. 5; [2 @i+kua: ie táve l] // Gi+kwáye táve l/ It went real fast CA p. 5; [1 viiák 2] // viyák 1/ They take it there PW p. 17.

[i:] and medially in the word and contour before
[i:] and medially in the word and contour before [ú].
[3 ei:cim 1] / vei:cim v/ They are drinking CA p. 10;
[2 si:lek 2] / vsi:lek v/ They roast it 6C p. 3; [3 heresúuol 3]
/ vheresúwol v/ It's like that in Supai ES p. 30; [3 ceeúlok 1]
/ veeulok verte vasa her 8C p. 7.

[0] freely varies with [h] before [é] and [á] in the same morpheme: [2 tú+ nio hé uok 2] // tú+nyo hế wok // I stayed there DWT2 p. 14; [l hẩm tu θế uok 3] // hẩm tu θế wok // I stayed there DWT2 p. 20:, [3 ni θá θal kəmmiá·iə icokí+niə +niu+vuík 3] // nyiθá θal kəmmyá; yə icoki+nyə +nyu+vwik // That is the one they call Scar-face LS p. 13; [l ni há həwakətəm +nia?io:k 2] // nyihá həwakətəm +nya?yɔ:k // When I get the both of them (those) LS p. 17;

[] varies freely with [] as a conditional past suffix:
[] təli: (η-ui tθιm+ aɔ́: pok 3] // təli: iη-wi iθim+ aɔ́: pok t/

He said I should sign it BS p. 37; [] iúa t[m 2] /t yua iθim 7/

[s, v] contrast initially in the contour and word before [L] and [s, v, 0] contrast in the same environment in the contour before [L]: [2 sikeuæ:+kui L+nia:m 1] // sikewe:+kwi i+nya:m l/ It turned back over on the road CA p. 5; [2 v/se?oje tave 3] // vise?oce, tave 1/ They watched it closely DWTI p. 4; [1 siia:vik 1] // siya:vik // It was on its side CA p. 5; [2 @i+kua:ie tave 1] // @i+kwaye tave l/ It went real fast CA p. 5; [1 viiak 2] // viyak 1/ They take it there PW p. 17.

[s, 0] contrast initially in the word and contour before

[i:] and medially in the word and contour before [ú].

[3 0i:cim 1] / voi:cim // They are drinking CA p. 10;

[2 si:lek 2] / vsi:lek // They roast it 6C p. 3; [3 hévesúuól 3]

/ vhévesúwól // It's like that in Supai ES p. 30; [3 ceoúlok 1]

/ vceoúlok // They wash her 8C p. 7.

[0] freely varies with [h] before [é] and [á] in the same morpheme: [2 tú+ nio hé uɔk 2] // tú+nyo hế wòk // I stayed there DWT2 p. 14; [l hâm tu θé uɔk 3] // hâm tu θέ wɔk // I stayed there DWT2 p. 20:, [3 ni lθá θal kəmmiá·iə icokí+nio +niu+vuík 3] // nyiθá θal kəmmyá; yə icoki+nyə +nyu+vwik // That is the one they call Scar-face LS p. 13; [l ni lhá həwakətəm +nia?iɔ:k 2] // nyihá həwakətəm +nya?yɔ:k // When I get the both of them (those) LS p. 17;

[] varies freely with [] as a conditional past suffix:
[] təli: (η-ui tθιm+ aɔ́:pok 3] // təli: iη-wi iθim+ aɔ́:pok //

He said I should sign it BS p. 37; [] iúa t/μ 2] // yúa iθim //

I said I wanted it B5 p. 37.

8.1.8 [m, n] may contrast initially in the word and contour before [a], medially in the contour and word before [a], as the closing consonants in the environment [Ca_j] and as the initial consonant of an unstressed closed final syllable in the contour: [1 meGim 1] // meGim // You drink it CA p. 7; [1 neva:k 3] // neva:k // They came there PDLS p. 7; [1 t+nix nemakan2] // neva:k // They came there BS p. 3J; [3 coqiac hanaka +miom 2] // coqiac hanaka +myom // The-one with the cedar-berry necklace (proper name) get it for me Buffalo p. 3; [1 kak + kuee +spok +shanjum+it 3] // kak +kwee +spok +spok +spok +spok +shanjum+it 3] // kak +kwee +spok +spok +shanjum+it 3] // kak +kwee +spok +s

[m, n, η] contrast finally in a closed syllable in the contour after [i]: [3 tu ua:k-ua:kim l] / tu wa:k-wa:kim l/

Just going slowly CA p. 6; [1 cəmi·k ma:tini mingnin l]

/ tcəmi·k ma:tiny minunin l/ They lay her there on her body

on her stomach 8C p. 8; [1 vomin l] / vomin l/ You went

back IC p. 4.

[m, n, η] also contrast morpheme final in contour medial: [2 pán taik 2] // pán tayk // When they get old LS p. 16; [3 vám pá tái 1] // vám pá táy // Now I am old

BS p. 37; [3 kân niútæ ú· + nia l] // kân nyútæ ú·nya // You didn't see it BS p. 33:

[m, n, η] contrast before /y/ in a closed syllable:

[3 málkem ticinniúm + iθιm 1] /7 málkem ticinnyúm +iθim 7/

They were turned into rats Buffalo p. 11; [l kuée kιnniá:ik l]

// kwæ kinnyá:yk 7/ The hunters Buffalo p. 17; [2 guammyú: l]

// kwammyú: // He kept coming Buffalo p. 24:

[m, η, n] contrast in [V_+1]: [l kam-iúiη + mɔ +miú·m 2]

/ kam-yúiη +imɔ +myú·m // You did something Buffalo p. 20;

[3 málkəm ticiηηiúm+ie m l] // málkəm ticiηηyúm +ieim //

They turned into rats Buffalo p. 11; [3 tûv ei:n + m - uic m 3]

/ tûv ei:n +im-wicim // I was just drinking CA p. 10.

Only [m, n] have syllabic allophones. These were discussed and phonemicized in the section on syllable division. (See Section 7.)

8.1.8. [1] has only one allophone which sub-minimally contrasts with [t, t, n] as follows:

[1] may sub-minimally contrast with [t] medially in the word and contour before [ú] in an open syllable, initially in the word and contour before [á] in a closed syllable, and finally in the contour after [î]. [3 luiluîk 2] / luiluik 1/
They lined up PW p. 8; [3 tatúik 3] / tatúik 1/ It heats it 9C p. 10; [1 láplápcôk 2] / láplápcôk 1/ They make patties 6C p. 5; [1 táptápok 3] // táptápok 1/ She flattens it 9J p. 10; [1 gé·víl 1] / lqé·víl 1/ It's sticky 9C p. 14;

[l gæk spo tə¢m m²t l] // kak spo təúm mit // I don't know but... 9J p. l.

[1] may contrast with [t] medially in the contour and word before [i], finally in an open syllable before [i] and in a closed syllable before [i]: [1 cia lia i 1] / cicilia y //
They weave 13J p. 8; [1 patia took 2] / patia took ?/
It's hard PW p. 10; [3 iuîlel] // iwîle // Weeds DWT2
p. 11; [1 kéte 1] // kute // Long ago PDLS p. 9;
[2 təpuluk 3] / təpulik // They wet it 70 p. 3;
[3 iakpētuk 1] // yakpētik // Everybody is drunk PDLS p. 7.

For contrasts of [1] and [n] finally in the contour and as the onset of a final closed syllable, refer to above examples with [t] and [1] and sections on nasals.

[n] also may contrast with [l] initially in the word and medially in the contour before [e] before [+1] and in a consonant cluster before [j]. For examples of [n] in these environments see sections on nasals: [3 uaksi: +nie leuik 3]

// waksi: +nye lewik // They are like cattle BS p. 1;

[2 siljim -uici:m 1] // silcim -wici:m // They barbecue roast it. 9C p. 12; [3 kual + laia taum 1] // kwal +aia taum // He doesn't want to do it again CA p. 11.

8.1.9 /w,y/ have one allophone apiece which contrasts initially in the contour and word before [a], medially in the word and contour before [æ.], as the onset of a final closed syllable, finally in the contour, and before [+1]. (For reasons why [u]

[l gæk spo tə¢m m²t l] // kak spo təum mit // I don't know but... 9J p. 1.

[1] may contrast with [t] medially in the contour and word before [i], finally in an open syllable before [i] and in a closed syllable before [i]: [l ciallia·i l] // cicilia·y //
They weave 13J p. 8; [l patia took 2] /p patia took ?/
It's hard PW p. 10; [3 iuîlel] // iwile // Weeds DWT2
p. 11; [l kéte l] // kute // Long ago PDLS p. 9;
[2 tepúlik 3] / 7 tepúlik ?/ They wet it 70 p. 3;
[3 iakpetik 1] // yakpetik // Everybody is drunk PDLS p. 7.

For contrasts of [1] and [n] finally in the contour and as the onset of a final closed syllable, refer to above examples with [t] and [1] and sections on nasals.

[n] also may contrast with [l] initially in the word and medially in the contour before [e] before [+1] and in a consonant cluster before [j]. For examples of [n] in these environments see sections on nasals: [3 uaksi: +niə ləuik 3]

// waksi: +nyə ləwik // They are like cattle BS p. 1;

[2 siljim -uici:m 1] // silcim -wici:m // They barbecue roast it. 9C p. 12; [3 kual + laia taum 1] // kwal +aia taum // He doesn't want to do it again CA p. 11.

8.1.9 /w,y/ have one allophone apiece which contrasts initially in the contour and word before [a], medially in the word and contour before [æ.], as the onset of a final closed syllable, finally in the contour, and before [+1]. (For reasons why [u]

and [i] are separate from [u] and [i] see Section 7.) [2 uána uá:k 2]

/ wána wá:k 1/ They lived in a tent 5C p. 11; [1 iá·mik 1] / yámik /

They went back IC p.3; [3 luuáé·hítnia iám 3] / luwá·hítnya yám /

He goes to the one he wants to marry 9J p. 1; [3 tiiáé·clnj 1]

/ tiyá·cinc / That coin 5J p. 2; [3 má:n qá·cə tnilttlu:cə tkiú:uɔk 2]

/ má:n qá·cə tnyittu:cə tkyú:wɔk / The little children all go to school.

BS p. 32; [2 uívlm - iɔ·k 3] / wivim - yó·k / They made it of rock BJ p. 2.

[u] occurs contour finally only after [æ·] and [i] never occurs contour finally after [æ·]: [2 viiæ·u 2] / viyə·w / She seized it Buffalo p. 7; [l nilmi·ə homá·i 2] / nyimi·ə homá·y / The sons of lion Buffalo p. 9; [3 guæ·u+luvlm 3] / kwə·w+uvim / The meeting BS 19; [l niu? pāi +l mjiiok 3] / nyú?pāy +umciyɔk / They were not included 8C p. 7.

A casual re-reading of the contrasts and allophones in 8.1.1.-.9 will show that all the phonemic norms in the same point class contrast initially in the contour and word, medially in the word and contour and/or medially in the contour and initially in the word and finally in the contour, and many contrast before [+1].

The only omissions were [m] and [h] initially and [h] medially in a stressed syllable. The following examples will illustrate these phonemes in these positions where they sub-minimally contrast with other members of their point class which weren't illustrated above:

[l má: +niə tek 2] / má: +nyə tek / Many children, PW p. 17;

[l kúvəhánlm l] / kúvəhánin / It was good PW p. 10; [l hávajúk 2]

/ hávayúk / They came up like that LS p. 9.

Often these point-class contrasts were with the same vowel. I am not re-doing these for the sake of economy. However, in cases in which there is usually a question as to grouping, e.g. [t, t, l, n,] and [c] with the stops and fricative, I included examples in respective sections. The only other free variation among the point classes occurred with [v] and [w]: [2 uaps +niawi:m 1] / waps +nyawi:m //
Later it was my uncle (who took me) LS p. 8; [1 vapps: 3] / vapps: 1/
Later DWII p. 2a.

8.2 There is one main problem in describing the Pay vowels: How to phonemicize the lax vowels [1, ε, ɔ, ¢]? These vowels occur frequently and have a wide distribution in connected speech and in two cases lax [ε, ɔ], occur more frequently than [e, o], their tense counterparts. Since these vowels frequently occur in a wide variety of environments, the possibility of an allophonic solution for them would not be very clear cut, because of the number of rules an allophonic solution would require. One solution is that these vowels are everywhere in free variation with their tense counterparts. This solution has been suggested by two people who are now working on Yavapai and Walapai. They have not, though, provided any corpus of connected speech which would justify such a solution.

A second solution is that these vowels are in free variation, allophonic free variation, in some, not all, environments and in others they are in complementary distribution, but because the rules needed to account for these complementary environments would be too complex and numerous, they should be set up as phonemes.

and [i] are separate from [u] and [i] see Section 7.) [2 und und:k 2]

/ wand watk // They lived in a tent 5C p. 11; [1 id·mik 1] / yamik //

They went back IC p.J; [3 luu whith his idm 3] / luw whith his his high yamik //

He goes to the one he wants to marry 9J p. 1; [3 time clnj l]

/ tiyé·cinc // That coin 5J p. 2; [3 man qá·cə +nilt+lu:cə +kiu:uɔk 2]

/ man qá·cə +nyit+u:cə +kyu:wɔk // The little children all go to school.

BS p. 32; [2 uiv lm -iɔ·k 3] / wivim -yɔ́·k // They made it of

rock BJ p. 2.

[u] occurs contour finally only after [aé] and [i] never occurs contour finally after [aé]: [2 viiaé u 2] / viyé w / She seized it

Buffalo p. 7; [l nilmi a homá i 2] / nyimi a homá y / The sons

of lion Buffalo p. 9; [3 guaé u + lúv lm 3] / kwá w + úv im / The meeting

BS 19; [1 niu? pai + 1 mjiiôk 3] / nyú? pay + úmciyôk / They were

not included 8C p. 7.

A casual re-reading of the contrasts and allophones in 8.1.1.-.9 will show that all the phonemic norms in the same point class contrast initially in the contour and word, medially in the word and contour and/or medially in the contour and initially in the word and finally in the contour, and many contrast before [+1].

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[l má:+niə fɛk 2] / má:+nyə fɛk // Many children, PW p. 17;

[l kúvəhán lm l] / kúvəhánin // It was good PW p. 10; [l hávaiúk 2]

/ hávayúk // They came up like that LS p. 9.

A third solution is to provide the evidence for the second solution, but not set up the lax phones as phonemes. This is my solution.

It is very doubtful that the tense and lax variations are everywhere in free variation, and if this is not the case and one is disposed to set them up as allophones, all of the complementary environments from connected speech must be listed. If such a corpus shows some but not all free variant environments, one cannot say simply that all environments are freely varying, without mentioning those environments in which no free variation occurred; nor can one solve such problems by the "feel"for free variation, or by saying that with more corpus, these free variations would eventually show up. There is now no method I know of to predict allophonic variations in some future corpus.

8.2.1 The following are phone distributions for the vowels.

[i] freely varies with [1] initially in the word, initially and medially in the contour and medially in the word and contour. Only [i] occurred finally in the contour in an open syllable. In open and closed syllables in the word and/or contour, there was much more free variation initially than medially and finally. Hyphens separate free variant pairs.

Initially: [l niall:t ii lth] / nyawi:t iyîth / When I finished

LS p. 9;-[l kak -uI:t ii lt l] / kak -wi:t iyît / I didn't finish LS

p. 10; [l pitə vak -uais:clm] / pitə vak -ways:cim / They were

the only ones living here 4c p. 4;-[l pitə kuva:vclm +lclk]

// pitə kuva·vcim +icik / They said they ask only for money

BS p. 19-20; [2 tu pasi:clk l] // tu pasi:cik / We call (name) our
selves Indians BS p. 18;-[l pa: sI:tə va:m matil kiiucavə]

Often these point-class contrasts were with the same vowel. I am not re-doing these for the sake of economy. However, in cases in which there is usually a question as to grouping, e.g. [t, t, l, n,] and [c] with the stops and fricative, I included examples in respective sections. The only other free variation among the point classes occurred with \(\frac{v}{and} \subseteq \frac{v}{w} \); \(\frac{v}{anpe} \text{ +niewi:m l} \) \(\subseteq \frac{v}{anpe} \text{ +nyewi:m l} \) \(\subseteq \text{

8.2 There is one main problem in describing the Pay vowels: How to phonemicize the lax vowels [1, ε, ɔ, ¢]? These vowels occur frequently and have a wide distribution in connected speech and in two cases lax [ε, ɔ], occur more frequently than [e, o], their tense counterparts. Since these vowels frequently occur in a wide variety of environments, the possibility of an allophonic solution for them would not be very clear cut, because of the number of rules an allophonic solution would require. One solution is that these vowels are everywhere in free variation with their tense counterparts. This solution has been suggested by two people who are now working on Yavapai and Walapai. They have not, though, provided any corpus of connected speech which would justify such a solution.

A second solution is that these vowels are in free variation, allophonic free variation, in some, not all, environments and in others they are in complementary distribution, but because the rules needed to account for these complementary environments would be too complex and numerous, they should be set up as phonemes.

/¿pā· sī:ti vá:m mátil kiyúcavə // All the names of the tribes that are here now BS p. 21; (only short [I] occurred before [c] in the corpus. However since length has been shown to occur unpredictably, it is very possible that the sequence *[1:c] will occur in some future corpus. Therefore, [1:] and [1:] cannot be said to be in complementary distribution here, in this third example but rather freely varying. I see no reason to separate grammatical from expressive rules. The only place this can be done is in citation forms. Otherwise, in connected speech, a very thin line separates the grammatical from the expressive.) Other variations of [I] and [I] follow: [2 cIclnd·m niuk sevk5clk 3] / rcicina m nyuk suvkocik // They sewed it and men put it over the door 5C p. 6;-[2 cicimavlk 3] // cicimavik // They cleaned it up, DWT2 p. 1; (The variation here is in the distributive goal prefix ci-) [l nice tqlpəm l] / nyə tqipəm // At night Buff p. 39;-[l nice tqipa s Ita 3] / nya tqipa sita / One night, Buff p. 38; [3 kuếa +nia? elm)] / kwés +nya? eim // When I'm drinking CA p. 6;-[1 meeim 1] //məθim // When you drink CAp. 7; [1 mIci miclk l] // mici micik / You always say that Jp. 8;-[1 miclm miceH &M 2] // micim micehemy/ You alway say that, but...] J p. 8; Medially: [1 cuu It lm -ui:cə+kui ha tû 1] / ncuwit im -wi:cə+kwi ha tû // They spent it BJ p. 25; -[2 kavvuici +kuIhluə 3] / kavvwici +kwihiwə// They may do something LS p. 19; [3 hmeok[niə l] / hmeothinyə They cured her 3J p. 6;-[1 maji +quicəki+nniəh 3] //maci +kwicəkinnyəh 4/ They tell that P. 3 12J;

I have found only one example of [i] and [I] freely varying in a final closed syllable: [2 pdi crd kd +nillauim l] // pdy cut kd +nyilawim 1/

/ pa siti vá:m mátil kiyúcave // All the names of the tribes that are here now BS p. 21; (only short [1] occurred before [c] in the corpus. However since length has been shown to occur unpredictably, it is very possible that the sequence *[I:c] will occur in some future corpus. Therefore, [1:] and [1:] cannot be said to be in complementary distribution here, in this third example but rather freely varying. I see no reason to separate grammatical from expressive rules. The only place this can be done is in citation forms. Otherwise, in connected speech, a very thin line separates the grammatical from the expressive.) Other variations of [1] and [1] follow: [2 clclnd·m niuk sevkoclk 3] / rcicind m nyuk suvkocik // They sewed it and men put it over the door 5C p. 6;-[2 cicimavlk 3] / cicimavik // They cleaned it up, DWT2 p. 1; (The variation here is in the distributive goal prefix ci-) [l nice tqlpem l] / / nye tqlpem // At night Buff p. 39;-[l nice tqlpa sītə] // nyə tqipə sitə // One night, Buff p.] 8; [] kues +nia? θ[m]] / kwέρ +nya? θim // When I'm drinking CA p. 6;-[1 məθim l] //məθim // When you drink CAp. 7; [1 m ci miclk l] // mici micik / You always say that JJ p. 8; -[1 miclm miceH &M 2] // micim micehemy/ You alway say that, but...] J p. 8; Medially: [l cuu'it lm -ui:cə+kui ha tû l] / \(\tau\) cuwit im -wi:cə+kwi ha tû \(\psi\) They spent it BJ p. 25; -[2 kavvuici +kuIhluə 3] /7 kavvwici +kwihiwə// They may do something LS p. 19; [3 hmeok[nie 1] / hmeogki + nye // They cured her 3J p. 6; -[1 maji +quicəki+nniəh 3] /maci +kwicəkinnyəh 4/ They tell that P. 3 12J;

I have found only one example of [i] and [I] freely varying in a final closed syllable: [2 pdi crd kd +nillauim 1] // pdy cut kd +nyilawim 1/

How many winners? 9Ja p. 2;-[2 kal-lu m 2] / kal-lw m 1/ How many? BJ p. 23;

Now for those environments in which no free variation was recorded and where [i] and [i] appeared in complementary distribution, there are at least 5 environments for [i] or [i] where one or the other did not occur. The following are examples of all the environments I found where only [i] occurred: [3 iúclm -iú:clm +limai +lm +iv 2]

They said it. I think I heard it. BS p. 14; [2 mikiú:lja title púvj¢k]

The parts are of iron HSI p. 10; [3 iú:vjlk tivtív] Take and shake them HSI p. 2; [3 hatnuíl 3] Plants growing along rim of canyon 5C p. 2; [1 vinlmák 3] He left there Buff p. 7; [3 tikl; 1] A ticket

LS p. 3; [2 bûk-ilelk 3] It was there Buff p. 8; [1 bak visitæve maketviúm hûl 3] There's a branch there or something Buff p. 22;

Only [i] appeared as a second member of a vowel cluster (see 10) and only [i] before [n]: [3 úlnú: 3] // úinú: // My aunt LS p. 5;

These are some of the environments in which [i] did not occur in the corpus. [i], on the other hand, occurred before [v] and [n], not [ny] when lengthened. [i] did not occur there long: [l uasi:vjlm miuci |] They think so BS p. 6; [attvei:ni/] Just drinking CA p. 10.

Other environments in which only [i] occurred were: [#sqi],

[#uid-] [-di-], [#qi] [uik#], [#sli], [#skwi], before a vowel and before [v]. (For these examples see consonant clusters in 9.)

Before [l], [i] and [i] freely varied: [islilk] They roast it 6C p. 8;—

[3 silk mae uk] They roast and eat it BS p.]; [l uil 2] Green things Buff p. 22;—[3 uil 1] Green things 5C p. 2; There is no need to give all examples for the environments in which only [i] occurred.

The rules for [i] and [i] would be: all the examples for [i] and then [i] occurs everywhere else.

In unstressed position [1] and [i] freely vary everywhere except finally, after a vowel where the following consonant is not [t] or [n], before and after [y] where only [i] occurred; in a closed syllable before [k, v, 1, n] and initially before [m] where only [i] occurred: [i]: [3 luiluik 2] / luiluik i/ They line up PW p. 8; [2 tatha:tə +mui:ci 3] / luiluik itə +mwi:ci / They worked LS p. 7; [1 ahi:vjlm cav kiliia:ivə?h 3] / ahi:vcim cuv kiliya:yvə?h / They will be anxious PW p. 21; [3 iima:clk 1] / yima:cik i/ They dance PW p. 2.

[1] occurred before[k, l, m, n, v] in a closed syllable and before [t] as a second member of a vowel cluster: [l cúlt vá:m l]

/ † cúit vá:m // Even now BS p. 15; [3 hal -iú:clk 3] / † hal -yú:cik //
They came from there PW p. 1; [3 uîhá klnpácac l] / wîhá kinpácac †/
Flagstaff PW p. 2; [l mákll viú:m l] / † mákil vyú:m // They came
behind your back PW p. 19; [2 kávajúclv l] / † kávayúciv †/ Some of
them PW p. 5; [l iúhiiú lm +iclm 3] / † yúhiyú im +icim †/ They
wonder BS p. 7;

In all other positions [i] and [i] freely vary. Initially:

[2 @i+kud:i=? tdva 1] / # @i+kwd:y=? tdva #/ They are real fast CA p. 6;

[H @l+kud:i= tdvlm 1] / H @i+kwd:y= tdvim #/ They are real fast

CA p. 6. Medially: [1 @=pitok + >tulni sli:ni 1] / # @=pitok + >tulny sli:ny 1/

The frying pan on the stove hardened it 9C p. 9; [# p=quini touik 2]

/ # p=quiny towik 1/ Some of the women HSI p. 2; Finally: [1 iuhiiu

lm+iclm 1] / # yuhiyu im+icim 1/ They wonder BS p. 7;

The rules for [i] and [i] would be: all the examples for [i] and then [i] occurs everywhere else.

In unstressed position [1] and [i] freely vary everywhere except finally, after a vowel where the following consonant is not [t] or [n], before and after [y] where only [i] occurred; in a closed syllable before [k, v, l, n] and initially before [m] where only [i] occurred: [i]: [3 lúilúik 2] / lúilúik 1/ They line up PW p. 8; [2 tathá:tə +mui:ci 3] / ltathá:tə +mwi:ci 1/ They worked LS p. 7; [1 ahi:vjlm cav kiliiá:ivə?h 3] / ahi:vcim cav kiliyá:yvə?h 1/ They will be anxious PW p. 21; [3 iimá:clk 1] / yimá:cik 1/ They dance PW p. 2.

[1] occurred before[k, l, m, n, v] in a closed syllable and before [t] as a second member of a vowel cluster: [l cúlt vá:m l]

/ †cúit vá:m // Even now BS p. 15; [3 hal -iú:clk 3] / † hal -yú:cik //
They came from there PW p. 1; [3 uîhá klnpácac l] / wîhá kinpácac †/
Flagstaff PW p. 2; [l mákll viú:m l] / † mákil vyú:m // They came behind your back PW p. 19; [2 kávajúclv l] / † kávayúciv †/ Some of them PW p. 5; [l iúhiiú lm +iclm 3] / † yúhiyú im +icim †/ They wonder BS p. 7;

In all other positions [i] and [l] freely vary. Initially:

[2 0i+kuá:je? táva 1] / \$\pii+kwá:ye? táva \$\psi/\$ They are real fast CA p. 6;

[H 0l+kuá:je távlm 1] / H 0i+kwá:ye távim \$\psi/\$ They are real fast

CA p. 6. Medially: [1 0=pitok +>túlni sli:ni 1] / \$\pi 0=pitok +>túiny sli:ny \$\psi/\$

The frying pan on the stove hardened it 9C p. 9; [\$\pi pəquini touik 2]

/ \$\pi pəquiny towik \$\psi/\$ Some of the women HSI p. 2; Finally: [1 júhijú lm+iclm 1] / \$\pi vúhiyú im+icim \$\psi/\$ They wonder BS p. 7;

[3 niu+vuiclm 1] //nyu+vwicim?/ They did not BS p. 8;

There was one instance of nasalization occurring with [i:] in free variation with \emptyset and one instance with [i:] where it freely varied with non-nasal [i:]: [2 kuú+niə ui:uɔ cámo ulmeh] / kwú+nyə wi:wɔ cámo wimeh \checkmark I forgot my knife Buffalo p. 14; [3 ultlk H] // witik H/ It's mine β , β , β ; [3 nuuli:t lk 3] // nuwi:t ik \checkmark They cook it PDLS p. 1; [2 quén niəuli: t, lk 1] // kwen nyəwi:t ik \uparrow / She cooked something β J p. 10;

There is one other feature which only occurs with [i]. This is the fortis syllable [ti]. In only one morpheme, fortis [ti] always occurred: [lpatikavjlm muica 2] // patikavcim mwica// They got to go there PW p. 1.

It is apparent from the distributions of [i] and [l], stressed and unstressed, as given above, a simple solution of allophonic free variation everywhere is not possible. In terms of the corpus and not going beyond it, complementary distribution as well as free variant statements must be used if [i] and [l] are to be grouped together.

8.2.2 The distributions of $[\epsilon]$ and $[\epsilon]$ are quite similar to $[\epsilon]$ and $[\epsilon]$, but much simpler to state. There are some environments in which $[\epsilon]$ and $[\epsilon]$ freely vary, some in which only $[\epsilon]$ or $[\epsilon]$ occurred. In unstressed position, however, they freely varied everywhere or only $[\epsilon]$ occurred.

Initially, [é] and [é] freely vary after [k, w] and [kw]:

[l ké clc-iæ:clmjlk] // ké cic-yé:cimcik // Where did they send it?

HSI p. 5;-[] ké +kué +spó:c¢v l] // ké kwé +spó:cuv // (Send them)

where the people are educated BS p. 20; [l uémiiá m] // wémiyá m//

You went away LS p. 1; [1 uémiiúclm 1] / wémiyácim / You (all)
went away Buff p. 31; [3 quév + i:vemtêm 1] / kwév + i:vemtêm /
There must be lots of wood here 4C p. 1; [2 quév tæ tûv 1] / kwév
tá tûv // Something big DWT 2 p. 3; [2 quénnia ui:t lk 1] / kwénnya
wi:t ik // She cooked something 3J p. 10; [1 quéni vauá:qam niú:lal]
/ kwény vawá:qam nyú:la // Something came up after the weeds DWT2
p. 11.

Open syllables after [kw], medially in the contour and initially in the word: [3 kế +kuế +spố:cov 1] / kế kwế +spố:cuv 1/ (Send them) where they can be educated BS p. 20; [2 tu + kuế - Đi:v 2] / tu kwế - Đi:v 1/ They drank something BS p. 9.

[é] and [í] freely vary after [p] and [t] in an open syllable medially in the contour and word: [3 sœlktékə+hwækə 1] / sælkté+hwækə //
Two thumbs (proper name) 12J p. 1; [1 mæté vici iók məvimik 1]

/ mæté vici yök məwimik // There were too many to take 3J p. 2;

[3 təɔ́·lvə clpéə 1] / təɔ́·lvə cipéə // They covered the sweat-house

Buff. p. 34; [2 clpéviju +njæmk 1] / cipéviyu +nyæmk // Cover it

with a blanket 5C p. 5.

The variation of $[\epsilon]$ and $[\epsilon]$ here could be complementary, i.e., $[\epsilon]$ before [v]. However, $[\epsilon]$ occurs before [v] in $[kw\epsilon v]$, see above. Therefore, [v] cannot be said to be a conditioning factor.

Both [ϵ] and [ϵ] occur finally in the contour but not in free variation. Only in a final closed syllable do they freely vary.

Finally in free variation: [2 tu hi +nilk nilkuww 3] / tu hi +nyik nyikuww 1/ They moved it lower BS p. 4; [1 kuww 1] / kuww 1/
It's low (deep) Buff. p. 5.

You went away LS p. 1; [1 uémiiáclm 1] / wémiyácim / You (all)
went away Buff p. 31; [3 quév + i:vemtêm 1] / kwév + i:vemtêm /
There must be lots of wood here 4C p. 1; [2 quév taé tav 1] / kwév
tá tav / Something big DWT 2 p. 3; [2 quénnia ui:t lk 1] / kwénnya
wi:t ik / She cooked something 3J p. 10; [1 quéni vauá:qam niú:la]]
/ kwény vawá:qam nyú:la / Something came up after the weeds DWT2
p. 11.

Open syllables after [kw], medially in the contour and initially in the word: [3 kế +kuếp +spố:cov 1] / kế kwếp +spố:cuv 1/ (Send them) where they can be educated BS p. 20; [2 tu + kuếp dí:v 2] / tu kwếp dí:v 1/ They drank something BS p. 9.

[é] and [é] freely vary after [p] and [t] in an open syllable medially in the contour and word: [3 sœlktékə+hwákə l] / sœlkté+hwákə l/
Two thumbs (proper name) 12J p. l; [l maté uici iók məu im lk l]

/ maté wici yök məwimik // There were too many to take 3J p. 2;

[3 təɔ́·lvə clpéə l] / təɔ́·lvə cipéə l/ They covered the sweat-house

Buff. p. 34; [2 clpéviju +niaumk l] / cipéviyu +nyaumk l/ Cover it

with a blanket 5C p. 5.

The variation of $[\epsilon]$ and $[\epsilon]$ here could be complementary, i.e., $[\epsilon]$ before [v]. However, $[\epsilon]$ occurs before [v] in $[kw\epsilon v]$, see above. Therefore, [v] cannot be said to be a conditioning factor.

Both [ϵ] and [ϵ] occur finally in the contour but not in free variation. Only in a final closed syllable do they freely vary.

Finally in free variation: [2 tu hi-+nilk nilkuuzw 3] / tu hi-+nyik nyikuwzw 1/ They moved it lower BS p. 4; [1 kuuzwk 1] / kuwzk 1/
It's low (deep) Buff. p. 5.

Final [é]: [2 niuvúc kluié: 1] / Inyuvúc kiúiýí: 1/ That doctor] p. 5; [2 tu +niahé 1] / tu +nyahé 1/ I'll be here LS p. 2;

There is one example of an occurrence of [é] and [ɛ] in the same syllable type but different morphemes. (Also compare final [yɛ] and [ye] above): [3 hak -ua:mijɛk 2] / hak wa:miyɛk // They were angry here BS p. 36; [1 paes lm tijek 1] // pasim tiyɛk // He came with the money 9 JA p. 2; Here and above [e] and [e] occur in [y_k#] in assumedly different morphemes with no free variation recorded.

[e] and [æ] freely varied in two instances: [l pes-is-clk l]

/ pes - yo.cik / They got the money 7c p. ll; [l pæs sio:clk 2]

/ pes syo-cik / They got the money LS p. l9; [3 hes pais l]

/ hes pays / All the dress Buff p. 6; [2 hæ:jlni 2] / he:clny /

The dresses HSI p. ll.

There are other environments, other than those given above in final position, where no free variation occurred. I will give examples of these only for [e].

Only [\varepsilon] occurred unstressed, except before [y], where only [e] occurred: [lueidm l] They went away LS p. 7.

[έ] did not occur in [w_#], [#q], [k_k#], [C_ŏ]; and the environments where [e] varied with [æ]: [l tlmek l] / timek î/ She is crazy 8C p. 3;

[3 ti+niuué dáve 3] // ti+nyuwé táve // Very far over there
4C p. 8; [3 qé:cim má:+ni,lqm 3] // qé:cim má:+nyilûm //
When it gets a little soft 13J p. 2; [3 kiké·k 3]
// kiké·k // It's strong 5J p. 5; [3 hméokí+nie 3]
// hméoki+nye // They cured her 3J p. 6; In all other
environments in which no examples of free variation were given,
[ɛ̃] and [ɛ̃] occurred.

[ú] freely varied with [é] initially after [+1] and as the second member of a vowel cluster: [3 ham+lém tú? 2]

// ham +úm tú? // No more BS p. 5; [l @am+lúm 3] // @am+úm //
No more 7C p. 3; [@ah]; [2 təêm tu pá+ niəu·k 2] // təúm tu
pá+ nyəú·k // They did not see them BS p. 30;

[H huá·1ja +nilt teum 3] // hwá·lca +nyit teum 4/ They do not plant anymore PD p. 3;

In unstressed position, [u] and [¢] freely varied only in final closed syllables in the environment / C - C#/:

[l pácuc - uajók 2] / pácuc -wayók // They all lived here

4C p. 4; [l niúcgc kak hána teúm hamá:t l] // nyúcuc kak

hána teúm hamá:t // I don't think that's good 5J p. 4.

Only $[\not q]$ occurred finally, medially and initially in other closed syllables. Only $[\H u]$ occurred in open syllables.

[i] and [i] varied with [ú] and [i] respectively in two instances: [l tú tl+ni(t+ú:jo l] // tú ti+ny, t+ú:co //
They were at school BS p. 9; [l kak tl+niút+úcl+niæ l]
// kak ti+nyút+úci+nyæ // Before they went to school BS p. l;
[2 ts+scid kal-uúk l] // ts+scút kal-wúk // They worked it and put them in all around 7C p. 8; [3 kal-uík l] // kal
-wík // They worked it BS p. 25;

The following pair is an example of complementary distribution of [ú] and [ý] finally: [û:+v] - [ú:]: [2 haiká:v l] // haykú:v l/ The white man CA p. 2; [3 haikú:c 2] // haykú:c // The white man LS p. 6.

There are numerous other examples of complementary distribution of [u] and [a] besides this example. In this respect [u] and [a] parallel the distributions of the other vowels discussed: They have some environments in which they freely vary and some in which they are in complementary

distribution. In those environments in which no free variation was recorded, for example, [a] occurred finally in /y _ v#/, medially in [c_v] and [c_d], and initially in [#S_C], [t_m], [t_v], and [n_n], [u] did not occur in these environments in the corpus in free variation with [a].

Examples of [4] in those environments in which [u] did not occur finally: [1 vam ciiév 2] It's right here Buff p. 12: medially: [2 tuiév cévon 3] I just got it IS p. 15; [2 ts+scéd gal-ugk 1] They worked it and put them in all around 7C p. 8; Initially: [1 sé:1jck 2] They tear it down BS p. 32; [1 témtém 1] They zigzagged CA p. 3; [2 tévkiæl -iæ:k 1] The saddle is in front PW p. 12; [3 nénjem ts+niik 1] They push on the stomach 5J p. 4;

The distributions, then, for [u] and [¢] when grouped together are free variations under ['] initially in open syllables; after [+1]; as the second member of vowel clusters and finally in all closed syllables except those environments just given where only [¢] occurred. [u] occurs everywhere else.

Only [q] occurred in all environments in closed syllables other than the examples given above and only [u] occurred in open syllables.

8.2.4 Initially in the contour, [6] freely varied with [6] after \sqrt{y} , \sqrt{y} and \sqrt{sp} in open syllables; after \sqrt{y} , \sqrt{y} in closed syllables and after \sqrt{s} in a closed syllable. Initially

distribution. In those environments in which no free variation was recorded, for example, [$\rlap/$] occurred finally in $/y = v\rlap//$, medially in $[c_v]$ and $[c_d]$, and initially in $[\rlap/\, S_c]$, $[t_m]$, $[t_v]$, and $[n_n]$, [u] did not occur in these environments in the corpus in free variation with $[\rlap/\, s]$.

Examples of [4] in those environments in which [u] did not occur finally: [1 vam ciiev 2] It's right here Buff

p. 12: medially: [2 tuiev cevon 3] I just got it LS p. 15;

[2 te+sced gal-ugk 1] They worked it and put them in all around 7C p. 8; Initially: [1 se:1jck 2] They tear it down

BS p. 32; [1 temtem 1] They zigzagged CA p. 3; [2 tevkiel

-ie:k 1] The saddle is in front PW p. 12; [3 nenjcm te+niik 1]

They push on the stomach 5J p. 4;

The distributions, then, for [u] and [¢] when grouped together are free variations under ['] initially in open syllables; after [+1]; as the second member of vowel clusters and finally in all closed syllables except those environments just given where only [¢] occurred. [u] occurs everywhere else.

Only [q] occurred in all environments in closed syllables other than the examples given above and only [u] occurred in open syllables.

8.2.4 Initially in the contour, [6] freely varied with [6] after \sqrt{y} , \sqrt{y} and \sqrt{sp} in open syllables; after \sqrt{y} , \sqrt{y} in closed syllables and after \sqrt{sl} in a closed syllable. Initially

in the word and medially in the contour [5] and [6] freely varied.

[y]: [l iók.j.m muici +guideo vá:m.3] // yókicim mwici +kwiteo vá:m // They used to get it 40 p. 6;

[3 iock 2] // yock // They got it 70 p. 1;

[v]: [3 vokik 1] / vokik 1/ They came back 80 p. 3;

[1 $v \le k$ 2] $/ v \le k \sqrt{1 + k}$ They went home LS p. 2;

[sp]: [2 spoce mi gavviúc l] // spoce mi kavvyúc l/
They knew a lot DVTI p. 8; [l spoke hánal] //spoke hána//
I know it well DVTI p. ll;

Closed syllables:

[y]: $[l \stackrel{i}{j} \stackrel{o}{o} k l] / \uparrow \stackrel{v}{y} \stackrel{o}{o} k \ell /$ They got it 7C p. 3;

[H iók H] $/ \iota$ yók ι / They got it 90 p. 10;

[v]: [1 $v \circ k$ 3] $/ \sqrt{v} \circ k \sqrt{V}$ I came back LS p. 21;

[1 $v\acute{o}k$ 3] $/ \surd v\acute{o}k \surd /$ I came back HSI p. 6;

[sl]: [3 gués slók -uik 2] // kwés slók -wik //

Jelly from the spine of an animal 70 p. 3; [3 uakši slók l]

// waksi slók // Jelly from the spine of a cow 70 p. 3;

Finally in the contour, [o] and [o] freely vary after [c, w] in closed syllables and after [w] in open syllables.

All these examples which follow represent free variations of the phonemic shapes of suffixes. Closed [w]: [2 guée pá uiuom 1] //kwée pá wiwom // He always helps 3J p. 9;

[l kak kuée kauiuom 1] //kak kwée kawiwom // They didn't help LS p. 12; [c]: [l ma: je to: pcom 2] // ma: ce to: pcom // They didn't eat 8C p. 3; [l hal niúte pa ú: com l] // hal nyúte pa ú: com // They go to school there BS p. 5;

Open [w]: [3 vələwiwə 1] / vələwiwə 4 They do it the right way HS p. 5; [2 tu əhani juuə 1] / tu əhani yuwə 4/
If I was good CA p. 7;

After [k] finally in a closed syllable, [5] may occur before [v] but only [6] occurs before [k]. In the examples given above, [6] and [6] occur before [k], albeit in different positions in the contour. Therefore the only complementary distribution rule could be that [6] only occurs before [v] finally. This could be one complementary distribution rule for [0] and [0]. Another is that only [6] occurs before [c]. (See first example under [y] above.)

[k]: [2 qace +huakok 2] //qace +hwakok // Two little ones 90 p. 8; [1 cuuɔkɔv 3] //cuwokov // Grand Canyon LS p. 13;

As the second member of a vowel cluster [6] and [6]

freely vary, but before [1, t, y] only [6] occurred: [3 tuá:ic/tni/
teo:p 3] // twá:[ycitnya teó:p // It wasn't very late DWTI
p. 1; [1 gák pế teó:p 2] // kák pế teó:p // It wasn't gone

DWTI p. 3;

before 1: [3 teó:lvô 1] // teó:lvô// The sweat-house Buff, p. 35;

before 1: [3 təɔ́:lvɔ̂ l] //təɔ́:lvɔ̂// The sweat-house Buff,
before t: [3 kəɔ́təva l] //kəɔ́təw// Hill top LJ p. 4;
before y: [1 sɔiók l] //sɔyɔ́k // They drag it HJI p. 6;

[c]: [l ma; je tɔ̂:pcom 2] // ma; ce tɔ̂:pcom // They didn t eat 8C p. 3; [l hal niúte pa ú:com l] // hal nyúte pa ú:com // They go to school there BS p. 5;

Open [w]: [3 vələuiuo 1] / vələwiwo // They do it the right way HS p. 5; [2 tu əhani juus 1] // tu əhani yuwo // If I was good CA p. 7;

After [k] finally in a closed syllable, [3] may occur before [v] but only [3] occurs before [k]. In the examples given above, [3] and [3] occur before [k], albeit in different positions in the contour. Therefore the only complementary distribution rule could be that [3] only occurs before [v] finally. This could be one complementary distribution rule for [0] and [3]. Another is that only [3] occurs before [c]. (See first example under [y] above.)

[k]: [2 qacə +huakok 2] //qacə +hwakok // Two little ones 90 p. 8; [1 cuuɔkɔv 3] //cuwokov // Grand Canyon LS p. 13;

As the second member of a vowel cluster [6] and [5] freely vary, but before [1, t, y] only [5] occurred: [3 tuá:ici+nia teo:p 3] // twá: yci+nya teó:p // It wasn't very late DWTI p. 1; [1 gák pế teó:p 2] // kák pế teó:p // It wasn't gone

DWTI p. 3;

before 1: [3 təɔ́:lvɔ̂ l] //təɔ́:lvɔ̂// The sweat-house Buff, p. 35; before t: [3 kəɔ́təva l] //kəɔ́təw// Hill top LJ p. 4;

before y: [l spick l] //spyck / They drag it HJI p. 6;

In unstressed position, [o] and [o] freely varied initially in the word and medially in the contour after [s] as the first member of a vowel cluster: [l tu soatkk l] // tu soatkk // I sold it 70 p. ll. [l uasoat l] // wasoat // The store BS p. 25.

These were the only sequences in which free variations of these two phones were recorded in the texts. In addition to the free variation distributions, some complementary distributions occurrences were given. (See above particularly before \(\int \begin{align*} 1 & \text{, y} \end{and elsewhere.} \) Together with these environments in which no free variation was recorded, there were others in which only [5] or [6] occurred.

For example, only [6] occurred initially after [c] and only [6] initially after [h, t, v, θ]. Initially [5] occurred everywhere else.

[c]: [3 cociác hanáka+mióm 2] The one-with-the-cedarberry-necklace (Proper name)- get it for me Buff. p. 3;

[h]: [3 ki dát homá: 3] Sons of coyote Buff. p. 15;

[t]: [3 touik H] Some of it HSI p. 2;

[v]: [3 vo+gué uca 2] That's what they talked about PW p. 5;

[0]: [1 00tény 1] Her arms 80 p. 8.

Finally in an open syllable, only [o] occurred after [0, p], and [o] occurred everywhere else.

[p]: [lɔ:po.3] No JJ p. 3;

[0]: [1 mui:c +kuic00 1] they used to do that BJ p. 5. Finally in a closed syllable [o] occurred only after [t, p] and in /1_k#/: [l stok 1] One 9C p. 2; [3 taptapon 1] You flatten it 90 p. 6; [3 caoulok 1] They washed her 80 p. 7.

Medially only [o] occurred after [c]: [l wico +kwi+nie 3] They did that 3J. p. 11.

Only [o] occurred as the second member of a vowel cluster: [licio:kin l] They said that Buff. p. 16.

The distributions of [o] and [o] are similar to those given for the other vowels in 8.2.1.-4. That is, it was shown that [o] and [o] do not freely vary everywhere but that they have some environments which may be sub-minimally contrastive or complementary depending upon which aspect of a given subminimal environment one wishes to emphasize. There were other environments where they were clearly in complementary distribution.

8.2.5. In the section on length (5.), [a], occurred with ['] only once where there was no free variations with [1]. that same section, [&] was shown in contrast with all phonemic norms, /i.; $\acute{\epsilon}$.; $\acute{\epsilon}$.; $\acute{\epsilon}$.; $\acute{\iota}$. In this section it will be shown that [e] contrasts with all phonemic norms. [æ.] and [a], contrasting with other phonemic norms under ['] and ['], respectively, and in complementary distribution with regard to stress must be grouped together.

In all of the following examples no free variation with [e] was recorded.

[i] contrasts with [ə] initially and finally in open syllables.

initially: [2 Papit, k hán, nhiúh 2] // Papitik háninnyuh //
It will be good when it's hard 8C p. 72; [2 Pi+kuá:ia?

táva 1] // Pi +kwá:ya? táva // They are real fast CA p. 6;

[1 iahá:nk niúk 3] // yahá:nk nyúk // Put it away good there

7C p. 1; [3 iimácaHIK 1] // yimácahik // They dance 12J

p. 1;

finally: [2 kak +sniúvi] // kak +snyúvi // They did
it again CA p. 8; [3 kút tá:və 3] // kút tá:və // A long
time ago PW p. 1. [ɛ] contrasts with [ə] initially and finally
in open syllables.

initially: [l te+spo:cik l] / te+spo:cik // They know something DWII p. 14; [l tehmamkin 2] // tehmamkin // The baking powder 90 p. 13;

finally: [2 kuée cámmus 3] // kwéé cámmws // I madé a mistake LS p. 11; [1 niæ nephó: ue 1] //nye nephó: we // My grandfather LS p. 5;

Contrasts for [u] and [e] occurred initially and finally, initially: [l kuuék l] // kuwék t/ It's deep BJ p. 5; [l kehán m l] // kehánim // The best ones 7C p. l; [e] may also occur before [w] initially: [l meuicetem l] // mewicetem // You (all) finished it PDHS p. 6.

Finally: [H va+viú:mi+kiu 2] / va+vyú:mi+kyu //
That's what happens Buff, p. 36; [l icoki+nie l] //icoki+nye//
They said that 50 p. 2;

[5] contrasts with [e] initially and finally in open syllables.

initially: [l səhá:v l] /√səhá:v √/ It hangs 8C p. ll; [l sɔiok l] /⁄sɔyok √/ They drag it HSI p. 6.

finally: [3 kak +nie ?iú:uɔ l] // kak nye ?yú:wɔ //
Not me LS p. 15; [l niæ nephɔ:ue l] // nye nephɔ:we // My
grandfather LS p. 5;

Medially in the contour and finally in the word:

[2 olo hak 1] //olo hak // The horses over there DWTI p. 18;

[2 pala+kuá@uvj¢k 2] // pala +kwá@uvcuk // Peaches and apricots 60 pl 1;

[a] contrasted with [e] only initially: [l vasú má·v 3] / vasú má·v // They eat greens BS p. l; [l vaskuik 3] / vaskwik // They put them on a house PW p. 13; [l ka†niik + imô 3] // ka†nyik + imô // Sometimes CA p. 6; [l kaháním l] // kehánim // The best ones 70 p. l;

[á] occurred fixed in only one sequence: [l válaui l]

[\acute{e}] contrasts with [\acute{u}], [\acute{u}], [\acute{e}], [\acute{a}], in that position, but [\acute{u}], [\acute{i}], [\acute{e}], do not occur initially after [v].

[á]: [3 vápe mat 2] / vápe mát // Later they mix in dirt 50 p. 3;

In all of the following examples no free variation with [a] was recorded.

[i] contrasts with [ə] initially and finally in open syllables.

initially: [2 θepiţιk hánιησία 2] //θepitik hániησμη //

It will be good when it's hard 8C p. 72; [2 θi+kuá:ie?

táva 1] // θi +kwá:ye? táva // They are real fast CA p. 6;

[1 iehá:nk niúk 3] // yehá:nk nyuk // Put it away good there

7C p. 1; [3 iimácaHIK 1] // yimácahik // They dance 12J

p. 1;

finally: [2 kak +sniúvi l] // kak +snyúvi // They did it again CA p. 8; [3 kút tá:və 3] // kút tá:və // A long time ago PW p. 1. [s] contrasts with [ə] initially and finally in open syllables.

initially: [l te+spo:cik l] / te+spo:cik t/ They know something DWII p. 14; [l təhmamkin 2] // təhmamkin // The baking powder 90 p. 13;

finally: [2 kuee cámmus 3] // kwee cámmwe // I made a mistake LS p. 11; [1 niæ nephó: ue 1] // nye nephó: we // My grandfather LS p. 5;

Contrasts for [u] and [e] occurred initially and finally, initially: [l kuuék l] // kuwék t/ It's deep BJ p. 5; [l kehán m l] // kehánim // The best ones 7C p. l; [e] may also occur before [w] initially: [l meuicetem l] // mewicetem // You (all) finished it PDHS p. 6.

- [i]: [3 uicətəm 3] //wicətəm // They finished it 3J p. 1:
- [ú]: [3 múl v tikáv 2] //múliv tikáv // The council gathered PDLS p. 5;
 - [é]: [l uémijá·m 3] //wémiyá·m// You went away LS p. 1;
 - [6]: [1 vomik 2] / vomik // I went home DS p. 2;
- [i]: [3 pam kitatinj] // pam kitatinct/ Coyote Buff. p. 20;
 [3 pa kətic] // pa kitatict/ Coyote Buff, p. 9.
- [a] [2 gâk háng toúm 2] / kák háng toúm 7/ It's not good Buff. p. 10; [1 kák háng toóp 2] // kák háng toóp 1/
 It's not good Buff. p. 12.
- 8.2.6. [á] freely varied with front [á] initially and medially. Only [á] occurs unstressed. (examples for [á] were given in previous sections.)

initially: [2 ia:jmIKH 3] // ya:cmikh // They are going Buff. p. 1; [1 ia:jms 2] //ya:cms 1/ They are going Buff. p. 27;

medially: [l hâl kuée cuuá: dêm l] // hâl kwée cuwá: dêm 1/
They chased after him Buff. p. 22; [l cév ni le uá dem távan 2]
//cúv nyíle wá: dem távin // They really chased after him Buff.
p. 32;

8.3. To sum up, Havasupai has a six vowel system, /i, u, α , ϵ , o, α /. All of these norms occur stressed and unstressed and all contrast there. /ə/ is defective under /'/ occurring only once there without free variations and there contrasting with

other norms. In addition, under ["], [a] contrasts with all other norms.

[ae ·] contrasts with all norms under ["] and there it is in complementary distribution with [a] and hence [a] and [ae ·] are grouped together.

The norms /i, u, o, ε / have allophones whose distributions do not unequivocally indicate their allophonic status. 1) In some positions these allophones clearly sub-minimally contrast with their norms, 2) In others on the other hand, they are clearly in allophonic free variation with their norms, 3) There were other environments where no free variations was recorded and these instances were so numerous, that they would appear to indicate a solution for these vowels which would separate the phones in question. In any case, as was shown here, the structuring of the Havasupai vowel system is not merely a matter of giving a couple of examples of free variations and letting it go at that. The examples given here indicate otherwise and, more importantly, indicate a serious defect in phonemic theory since they show that phonemic theory as it is formulated today cannot bridge the gap between educated intuition about what is phonemic and the fact that, even though we feel that free variation everywhere is the right solution for the Havasupai vowel system, this feeling cannot account for the closed corpus I presented here where three types of distributions, not one, were found.

- 9. Havasupai consonants may cluster differently with respect to the following four environments:
- EI: Within a morpheme not across a syllable boundary.
- E2: Within a morpheme across syllable boundaries.

other norms. In addition, under ['], [a] contrasts with all other norms.

[ae·] contrasts with all norms under ['] and there it is in complementary distribution with [a] and hence [a] and [ae·] are grouped together.

The norms /i, u, o, ε / have allophones whose distributions do not unequivocally indicate their allophonic status. 1) In some positions these allophones clearly sub-minimally contrast with their norms, 2) In others on the other hand, they are clearly in allophonic free variation with their norms, 3) There were other environments where no free variations was recorded and these instances were so numerous, that they would appear to indicate a solution for these vowels which would separate the phones in question. In any case, as was shown here, the structuring of the Havasupai vowel system is not merely a matter of giving a couple of examples of free variations and letting it go at that. The examples given here indicate otherwise and, more importantly, indicate a serious defect in phonemic theory since they show that phonemic theory as it is formulated today cannot bridge the gap between educated intuition about what is phonemic and the fact that, even though we feel that free variation everywhere is the right solution for the Havasupai vowel system, this feeling cannot account for the closed corpus I presented here where three types of distributions, not one, were found.

- 9. Havasupai consonants may cluster differently with respect to the following four environments:
- EI: Within a morpheme not across a syllable boundary.
- E2: Within a morphome across syllable boundaries.

E3: Within a word across morpheme and syllable boundaries. In some three member clusters, two different morphemes will occur without a syllable.

E4: Within a word across morpheme boundaries but within a syllable. In some three member clusters, two different morphemes will occur across syllable boundaries.

(In the following examples, some examples are from texts of connected speech and some from citation. Those from citation will be asterisked.)

9.1 EI: In EI, initial 2 member clusters, (1) begin with s, h when the second member may be w or y; (2) begins with k, m, v when the second member may be only w or y; (3) begins with p, t, k, when only h is the second member. Other clusters in EI have a more restricted distribution, e.g.; the only initial clusters with a stop as first member where a semi-consonant or h is not a second member are tq and kl. Other clusters are, ny, tw, qw. The only three member initial clusters in EI are sky, sny.

s occurs with all consonant types in initial 2 member clusters in EI except the fricatives and ?, ŋ, y. Examples are: \$\sin^2\cdot \cdot \cdot \forall \forall \forall \forall \cdot \cdot

There is one example of sq initially in the word but medially in the contour in the texts: qwáko sqó·w Chicken eggs 5J p. 1;

E3: Within a word across morpheme and syllable boundaries. In some three member clusters, two different morphemes will occur with a syllable.

E4: Within a word across morpheme boundaries but within a syllable. In some three member clusters, two different morphemes will occur across syllable boundaries.

(In the following examples, some examples are from texts of connected speech and some from citation. Those from citation will be asterisked.)

9.1 EI: In EI, initial 2 member clusters, (1) begin with s, h when the second member may be w or y; (2) begins with k, m, v when the second member may be only w or y; (1) begins with p, t, k, when only h is the second member. Other clusters in EI have a more restricted distribution, e.g.; the only initial clusters with a stop as first member where a semi-consonant or h is not a second member are tq and kl. Other clusters are, ny, tw, qw. The only three member initial clusters in EI are sky, sny.

s occurs with all consonant types in initial 2 member clusters in EI except the fricatives and ?, ŋ, y. Examples are: \$\square\$ smacivak \$\square\$ I went to sleep CA p. 7; \$\square\$ sli:ny \$\square\$ The frying pan 9C p. 9; \$\square\$ swa:t ik \$\square\$ They sing Buff. p. \$\gamma 8\$; \$\square\$ space mi kavvyúc \$\square\$ They knew I don't know how many DWTI p. 8; \$\square\$ scieci \$\square\$ They sweep 5C, p. \$\gamma\$; \$\square\$ stakva taúm-yît \$\square\$ It didn't open yet CA p. 2.

There is one example of sq initially in the word but medially in the contour in the texts: qwaks sq5.w Chicken eggs 5J p. 1;

The only initial s clusters not occurring in texts was sk and sn.
*skəm-wit ime Ankle; *snûnvûkə To wake up.

All 3 member initial clusters in EI beginning with s occurred in texts: \$\sqrt{\sky\delta} \cdot \lambda \lambda \text{lcik} \sqrt{\text{They irrigated it DWT 2 p. 12;: }\sqrt{\sny\delta} \sqrt{\text{sny\delta} \sqrt{k} \sqrt{Again}} \]
IC p. 3.

All initial 2 member clusters with h initial occurred in texts except hn-. An example of this occurred in citation: * hnákə Gourd. The following occurred in texts: / hwákik / Both of them 9Ja p. 1; // hla ka+nyilə wiməm / How many moons? 9Ja. p. 3; // hmá:+nyə// Children DWT 21 p. 5.

Initial k, m clusters: ↑ kwá+nyə wi:wɔ cámɔ wimɛ ✓ I forgot my knife Buff. p.³; ↓ klápcim ↑ They flatten it 7C p. 8; Examples of ky initially in the word only occurred contour medially: √ cuwɔkɔm nyə +kyuvim ✓ The road that comes up to Grand Canyon CA p. 4; my and mw clusters occurred initially: /myú·cik ✓ They always do it 12J p. 1; ✓ mwá·ta kə́ləwúk ↑ They work the flour 9C p. 10.

Examples of other initial clusters with w or y as second member:

† qwak nyimi:ny \(\psi \) Deer hide 7C p. 1; † twa-ynyim \(\psi \) Later 9C p. 5;

\(\psi \) nyi+stakvem \(\psi \) When it opens CA p. 1.

p, t, k and h: √pháy kélewi: √They cut it all up Buff. p. 23;

↑ khá:y yốk √ They get different things HSI p. 6; √vathú+nye thú √ They

just took her LS p. 4; √ thủ / Just PW, p. 5.

tq only occurred medially in the contour but kl occurred initially: Both occurred only once in one morpheme: \uparrow nyə tqépə \checkmark At night l JP.1; \checkmark klápcim \checkmark They flattened it 7C p. 8.

All of these initial clusters may occur medially in the word in EI, when those morphemes in which these initial clusters may occur initially are prefixed. Only 4 representative examples will be given of this. (see under appropriate section above for these clusters occurring initially):
\[\sqrt{nyi+stakvem} \] \[\sqrt{When it opens} \] CA p. 1; \[\sqrt{kak kwée me+hwá·lke} \] \[\sqrt{Anything you planted you take with you 12J p. 2; \[\sqrt{te+hmámki} \] \[\sqrt{Baking powder 9C p. 1; \sqrt{nya te+smácik} \] They got lost PW p. 18; Compare st, sm, here with these same occurrences above, initially. They occur in the same morphemes.

Examples of initial clusters occurring in EI medially in the morpheme, and never initially, occurred in citation and texts:

* to+kyok To pinch; * simo+kwito To be jealous (male); / hakto+kwivv / Peach springs IC p. 3; No clusters with s, h occurred medially but not initially. The same applies to tw.

9.1.1 EI conclusions: The majority of clusters are limited to the initial environment; medial clusters are in the majority of cases the result of prefixing morphemes to the morpheme in which the initial clusters occurred. Only 2 medial clusters, kw, ky, occurred which did not occur initially in the same morpheme. Fricatives s, h are most frequent as initial members, and s the most frequent of the pair.

Manner class shapes are F+S-N-L-SC, in order of frequency of occurrences and S-N-L+SC in order of frequency of occurrence. The only final clusters occurring here are those sequences which are shown in section 7 to be bound to contour final and in free variation with \$\omega\$ there. For example, kh, k?, k?h, mh and others given in section 7.

Since these clusters are expressive they will not be exemplified here.

9.2 In E2, as in EI, 2 and 3 member consonant clusters occur, but in E2 many more with much more variety occurred. Many of the clusters in E2 occurred only in citation. In texts and citation, the following manner class combinations occurred: S and F occurred with all manner classes; Loccurred with all but liquids; N with all but N, L; SC occurred with all but N and L. In texts however, stops occurred with all but SC; F and N with all but SC and L; L with all but N and L, and SC with just S and L. These instances from texts are now exemplified: SS: / túp.tápon / You flatten it 9C p. 6; / súk.tin / Sugar 9C p. 11; sik.ci:0əm? They lay it flat off the ground Buff. 30. SF: ttat.hat. +mwicik We always work DWII p. 26; / yac sp5+nyə vat. vuk qé-ctik / I knew that when I was small 3Jp. 9; /wak.si tem nyihatic V They own lots of cattle SR p. 10; \$\langle \theta \text{@ak vawa?.ham} \langle It stopped here CA p. 5; SN: /hú:ny tət.mɔk / She scratches her head 8C p. 5; FS:/ka+vyúci+nyə ná:h.qicik / That's when they wished for a different house SR, p. 7; √ tə0.kuwa:tə +nyə√ they jumped across Buff p. 29; / tu savin tao.taoi yɔ́+nyɔk / I ve got a speckled-white one Buff. p. 21; / yɔ́:vcik tiv.tiv / They took it and shook it HSI p. 2; / nyihál kwéð təθ. páyə V The iron HSPDI p. 7; √mah.pɔ+kyūp / Morpheme signalling the end of a narrative 5C p. 11; / nyit+u·cit+uicah.teh √ They should say go to school BS p. 20; FF: \(\psi \) waksi civ. so \(\) Cow's rib 7C p. 2; \(\psi \) nyuk tes. hácaθik \(\) They hang them there one by one 6C p. 3; FN: \suv.many \sqrt{Roots, DWTH, p. 5; J p. 2; NS: túm.tum lt zig zags CA p.); √ kwés kum.páyny l The brain 7C p. 3; wam.kava +nyuwal / The Mohaves lived there. DWTI p. 1; Inyan. pi My aunt 3 J p. 4; NF: tu kóm. 8 am I Coffee 9C p. 11;

9.2 In E2, as in EI, 2 and 3 member consonant clusters occur, but in E2 many more with much more variety occurred. Many of the clusters in E2 occurred only in citation. In texts and citation, the following manner class combinations occurred: S and F occurred with all manner classes; L occurred with all but liquids; N with all but N, L; SC occurred with all but N and L. In texts however, stops occurred with all but SC; F and N with all but SC and L; L with all but N and L, and SC with just S and L. These instances from texts are now exemplified: SS: / tap.tapon / You flatten it 9C p. 6; √suk.tin / Sugar 9C p. 11; sik.ci:0əm? They lay it flat off the ground Buff. 10. SF: tat.hatə +mwicik We always work DWII p. 26; / yac sp5+nyə vat. yuk q ctik / I knew that when I was small 3J p. 9; / wak.si tem nyihatic V They own lots of cattle SR p. 10; / oak vəwá?.ham / It stopped here CA p. 5; SN: /hú:ny tət.mɔk / She scratches her head 8C p. 5; FS:/ka+vyúci+nyə nd:h.qicik That's when they wished for a different house SR, p. 7; təθ.kuwά:tə +nyə√ they jumped across Buff p. 29; / tu savin táθ.táθi y5+nyok / I ve got a speckled-white one Buff. p. 21; y5:vcik tiv.tiv They took it and shook it HSI p. 2; Anyihal kwέρ təθ. payə V The iron HSPDI p. 7; / mah.pɔ+kyúp / Morpheme signalling the end of a narrative 5C p. 11; / nyit+ú·cit+uicah.teh / They should say go to school BS p. 20; FF: \(\square \text{waksi civ.s5}\) Cow s rib 7C p. 2; \(\square \text{nyuk tes.hacaθik}\) They hang them there one by one 6C p.]; FN: \suv.many \dagger Roots, DWTH, p. 5; kuv. ńewik They jumped it 12J p. 5; ham nyi tah.m & They cured them J p. 2; NS: túm.tum It zig zags CA p. ; kwés kum.páyny It The brain 7C p. ; / wam.kava +nyuwal / The Mohaves lived there. DWTI p. 1; 4 nyan ni My aunt 3 J p. 4; NF: tu kóm . 0 am 4 Coffee 9C p. 11;

NN: \ten.ma:kicim \tau They race SR p. 2; LS: \kiyuci+nyə ɔlɔ cɛl.qa \tau

A lot of horse manure there DWIp. 2; mal.kəm ticinnyum +i\ten \tau They
turned into rats Buff. p. 11; \tau tu sul.t\text{\tau}: \text{w} \tau Just soldiers BS p. 10;

LF: \tau mathrap hol.ho: lim \tau Boots PW p. 17; \tau hayku mul.və \tau U.S.

Government DWII p. 2; LSC: \tal.waywe yitik \tau Before they marry

9Ja p. 1 SCS: \tau hay way.tik \tau We lived there 1C p.); \tau hay.ku mulvə \tau

U.S. Government DWII p. 2; SCL: \tau low yony \tau She opens and shuts
her mouth 8C p. 6; SCSC: \tau pathrap tay.yac \tau My (dead) father LS, p. 5.

With division after the second phoneme, the initial phonemes may be ty or hm. ty.h: /təhity.hitycih/ They stack them HSI p. 2;

hm.té+nyə wicik / They plant squash also HSPD p. 2.

Conclusions for E2 in texts: 2 and 3 member clusters occurred here mostly medially in the morpheme. Only 1 initial 3 member cluster occurred. In order of frequency of occurrence of first members:

F-S, L, N, SC; as second members S, F, N, SC, L. Most overall frequency is that of first member order.

Occurrences of 2 member clusters in E2 only in citation will now be exemplified. With stop as first member: SS: cikpinka bat; kitkóka To tie a knot; wá?. ti-kyu I sat down. SF: í+nya lék.vo viyemka The sore is healing, θας θοτ.θότι+kyu She is trembling; SN: wak.mú·ka To be sad; tic.múcik To make new; SL: loc.loc To drip; SSC: wêc.yelko Buttocks, θup.yuwohe To hit, cic.wi:tuk To wipe; FS: ciθkika To sneeze, matkwεθta Spider, (θt also occurred in texts); 00v.tike A hole in the pocket (vt also occurred in texts), kaθ. ?imhə to call, kis.kikyu He's slipping; FF: civθi? Liver; FN: yásno Turkey, kuvnáko To carry; yútes.miyáyko To trick; FL: kuv.lakə To stumble; FSC: ci0.wəkə To be scolded; waswaskə To wave, kiθ.yέka To cross; NS: cin.púka Ant; NF: θόn.vik To be weak, kum. sówoco He's the one who's afraid; NSC: skam. wit iva Ankle; LS: wal. ? Wing; LN: al.mik To come up; LSC: yaliwa To try; SCS: taw.taw+úka To spank; SCF: kwéataw.sa Flower, təlwáy.və To marry (a woman); SCSC: wáy.wáy Round.

The sequence C.?V# is very frequent in citation but rare in texts. For example, sultaw.?a Soldier; kway.?a Shirt occur in citation but do not occur in texts. In citation, C.?V=) freely varies with CV#.

Three member medial clusters occurring in E2 only in citation are as follows: wayv.wávk To rest; áym.sa Onion; kil.kyók To tie; kwéð 0ólv.0ólvð Cotton.

One initial 3 member cluster was hm.pe?s Squash;

Conclusions for E2 in citation: 2 and 3 medial clusters occurred here mostly medially in the morpheme. Only 1 initial 3 member

cluster occurred. In order of frequency of occurrence as first members: F, S, N, L, SC; As second members: F, S, N, SC, L. For texts and citation combined: First members in order of frequency of occurrence: F, S, N, L, SC; second members: S, F, N, SC, L.

9.3 Occurrences of 2 member clusters in E3 from texts will now be exemplified:

SS: Jkút tav qé.c.tém + A long time ago when I was small JJ p. l; ↓ laplap.cok ↓ They make patties 6C p. 5; ↓ wice hama:t.kinh ↓ Maybe they did that 9J p. 4; 1 cicckéteút.kik 1 Corn balls 6C p. 9; 1 cic.kat.cik+ici yît↓ I mean they cut it up DWTI p. 11; (c.k and t.c occur here); Lyak.pr, ik I They get drunk PDLS p. 7; Lvam pa.n kic.pacicim I Then they let us go BS p. 29; I hwak.cik I Two things 5J p. 2; Lysk.tik Vesterday morning 7C p. 3; lkwés kic.qácscú:k L They began from the smallest Buff. p. 12; tet.qa:vcik pay T They pound all of it in 13Jp. 4; SF: ↓ nyisták. vəm ↓ When it opens CAp. 1; † pic.vik +imoy yum l I don't know how many are left PW p. 21; lyuk.θο sûmáciny 1 But they have watermelons 6C p. 11; 1 hála?. Oúyal halmá·t 1 Maybe I was nine years old DWTI p. 5; tu wa?.si:v tu wah I They start thinking about it DWTI p. 15; mi:cakic. 00 1 They always said that PDLS p. 6; 1 yîc há:nik túcik 1 They fix and check it up DWTI p. 10; lna?.hmét.vîŋŋyu ↓ You might get hurt 5J p. 13; Îyə ?há:nikh ↓ I fixed it up BS p. 11; SF: 1 yu+vwicim-wice +kwit. 00 1 They liked to do that IC p. 2; SN: Lcút a sit.mak l One year 7C p. 1; l pháy viyá c.mi iýit l Lots went Buff. p. 1; cic.nélin He dropped it BS p. 19; SSC: ke cic.yé cimcik That's where they sent them. HSI p. 5; wa?.yotik I They lived there (compound) DWTI p. 1. SN: I vuc kum cik.nam He is the one that plans it.

12J, p. 5; FS: them suv ko: cit They fenced it in there SR p. 8; ham sev_ti·cik | They blocked it in there SR p. 6; tahi:v_cimt They will do it PW p. 21; Itao_cik They split and dry it 6C p. 6; lowak nyina·h.cuh l When they kill the deer. 7C p. 1; ka+vyúci +nyə ná:h_qicik That's when they wished for a different house SR p. 7; 1?is.koynyl Wooden fence SR p. 2; FF: †kwêk tá0_vin All the dried things 60 p. 9; †tu yúv cúv_0oh I just got time LSP lJ; NS: Inyu miyam_cim myú·cik I They kept moving PW p. 8; | kava hanim_kol T It looked good PW p. 10; ↓ wam.pocuwóko↑ Grand Canyon DWTI p. 7; ↓ kwi·n.he↓ To go around CI, p. 5; I ham va: yúm_tik I When I quit LS p. 16; I hal nyiha:n_cim They fixed her LS p. 5; NF: \v2012wim_007 It's like that Buff. p. 13; \langle han_tem \langle It was good 3J p. 2; LS: \langle kokewé \cdot l_ke \langle Name of a place IS p. 6; \su:l_cik \tag{They tore it down BS p. 32; ↓walpay ↑ Walapais 12J p. 4; This is a compound; LF: ↓ siya:l.vim ↑ It is rising Buff. p. 25; LSC: ↓ yul-wivim↓ When it's ready 70 p. 9; I nyu+klapnyuk kəl-yuk ↑ They flatten it the same way 70 p. 8; SCS: Inyi+kwa: y.ceh I Our coats HSI p. 8; lkak haykú+kwé:w_cel No English DWII p. 6; lkuvnéw.kl He lifts it 5J, H, p. 2; SCF: \langle kiliya: y ve tave \langle It's real large PW p. 21; I hal Đốw vətikh I She bore her child there IS p. 3; SCSC: | pankita:y_we | The old people did that PDIS p. 9; 1 cay vim 1 They forget Buff. p. 8; 9.3.1. Occurrences of 2 member clusters which occurred in citation but not in texts will now be exemplified:

cluster occurred. In order of frequency of occurrence as first members: F, S, N, L, SC; As second members: F, S, N, SC, L. For texts and citation combined: First members in order of frequency of occurrence: F, S, N, L, SC; second members: S, F, N, SC, L.

9.3 Occurrences of 2 member clusters in E3 from texts will now be exemplified:

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12J, p. 5; FS: \ham suv_ko:ci They fenced it in there SR p. 8; ↓ ham sev_ti·cik↓ They blocked it in there SR p. 6; ↓ahi:v_cim↓ They will do it PW p. 21; \tao_cik\ They split and dry it 60 p. 6; lowak nyino h_cuh | When they kill the deer. 70 p. 1; ka+vyúci +nyə ná:h.qicik. That's when they wished for a different house SR p. 7; 1?is_koyny Wooden fence SR p. 2; FF: thwek tao.vinl All the dried things 60 p. 9; Ttu yúv cúv.och I just got time LSP lJ; NS: ↓nyu miyám.cim myú·cik↓ They kept moving PW p. 8; Jkava hanim_kol T It looked good PW p. 10; ↓ wam.pocuwóko↑ Grand Canyon DWTI p. 7; ↓ kwi·n.he↓ To go around CI, p. 5; I ham va: yúm_tik I When I quit LS p. 16; I hal nyihá:n_cim They fixed her LS p. 5; NF: \vec{vel} vel wim \ 00 T It's like that Buff. p. 13; I han_tem 1 It was good 3J p. 2; LS: 1 kôkewé·l_ke 1 Name of a place LS p. 6; \suce it down BS p. 32; $\int_{0}^{1} w d^{3} dy$ Walapais 12J p. 4; This is a compound; <u>LF</u>: ↓ siya:1.vim ↑ It is rising Buff. p. 25; LSC: ↓ yul_wivim↓ When it's ready 70 p. 9; ↓ nyu+klápnyuk kəl-yúk ↑ They flatten it the same way 70 p. 8; SCS: Inyi+kwa:y.csh I Our coats MSI p. 8; lkak haykú+kwé:w_cel No English DWTI p. 6; lkuvnéw.kl He lifts it 5J, H, p. 2; SCF: Lkiliya: y ve tave l It's real large PW p. 21; | hal 06w.vetikh | She bore her child there LS p. 3; SCSC: | pankita:y_we | The old people did that PDLS p. 9; 1 cay vim 1 They forget Buff. p. 8; 9.3.1. Occurrences of 2 member clusters which occurred in citation but not in texts will now be exemplified:

SS: nyi0ác +5:p_ki+nyə He didn't; cipəq_cə+kwi+nyə were punished; ya? pé táv+kyu He's living; (compound); vá? ka To arrive; takáp ka To exchange; takáp ti+kyu He was trading - exchanging; tet.pa:y.c.i-kw They stick them on 6, H, J; tikáp.pi-kyu It is gathered C, p. 5; SF: nyi0ác vák hikyu He will return; tst savká-kwi They fence them G, p. 5; nyatóp_ms Evening; wivim tit_névkyu They hit each other with stones; SL: waspat_leh In the store; SSC: ma?_we I am eating; FN: púv_mike To enter (many people); FSC: məkάθ.yúmε Did you call?; NS: kicyán.kə To peel; máη.keh You fell down; wim.te Don't begin C, p. 40; NF: vam wam.hiwe I will do it; nyan tám. 0əm I was hit; yəhán. vi+kyu Is he trained? NSC: nyác win.we I am doing it now; nyác vinám.we I am sewing; mán.wiws Did you eat it?; SCS: məcáy.kə To be hungry; kwa·w_ka To talk; tatpa:y_cikwi They stick them on 6, p. 5; SCSC: qac nyi+kwé·w_we Who sat down?; 9.3.1.1 The majority of 3 member clusters that occurred in texts in E3 had a syllable boundary after the first consonant, and the third member was usually an SC. In the following examples these will be illustrated. There is a morpheme boundary at the syllable boundary in these examples, and if the second member is v or m there is a morpheme boundary also between the second member and the following SC. This rule holds for k+ (-wi~-we) except in the sequence /# c~kVc.kw~y/ where there is no morpheme boundary after k and # is word initial.

With stop as first member: \$\int \text{0ak cic.kwacicim}\$ They put them there one by one HSI p. 2; \$\int \text{kic.kya:yvik}\$ There were a lot standing there HSI p. 4; \$\int \text{hani?.kyu}\$ ficim \$\int I\$ will be good 8C p. 3; \$\int \text{hana?.kwi?}\$ It's good 8C p. 9; \$\int \text{nye}\$ Thwak.spemil \$\int \text{Seven}\$ days 8C p. 2; \$\int \text{wa?.smam}\$ \$\int I\$ dreamed Buff. p. 20; \$\int \text{kweek kumpay.ny}\$ The brain 7C, p.3;

In summary, 3 member clusters in E3 with S as first member and morpheme division between second and third member but no syllable division there include: ?.ky, ?.kw. 3 member clusters with no morpheme division after the second member: c.kw, c.ky, ?.sm, k.sp, c.ny, y.ny.

With F as first member, there is a morpheme division after

the second member in the sequence /v.V~ky/:

wak həmu·k smace mi kav.nyucə / 2 or } sleeps or something Buff

p. 2; / kuv.vyu tavə ta?5:pitik / Not too many SR p. 1;

yətəv.kyyvim / Topocopa hilltop 4C p. 6; Only v occurred in v.ny,

v.vy, v.ky. An example of a member medial cluster with no syllable division after the first member or morpheme division after the

second member but a morpheme division of the first member: / və.skwik /

a horse-trailer SR p. 8;

With N as first member: kon.nyúk-wimo Some time ago PW p.3; bulkem.nyúye Scar face LS p. 1; kon.kyúce homé One of the sons Buff. p. 16; byé lim.kyu mi wél Oetúpem Over here or over there BS p. 2; malkem ticin.nyum +i6im? They turned into rats Buff. p. 4; These last three examples are the only instances of a morpheme division after the second member where

an N is the first member.

With L as first member: \[\lambda \alpha \rightharpoonup \rightharpoonup \text{Mal_lwim \tau How many? BS p. 23;} \]
\[\lambda \nyu + \kal_l \rightharpoonup \text{Vuk \tau They flatten it 7C p. 8; \lambda \text{tana.l_kyu} \]
\[\text{Vumk \tau She goes a little ways 8C p. 2; There is a morpheme boundary after k in the third example and l in the first example.

With SC as first member: \times times v_nyim \tau Later 9C p. 5;

With syllable division after the second member where
there is a morpheme division between the first two and last
two members, only 1 example occurred and y was initial:
\text{kan mahaym_ku+nye} \tau Vou white people SR p. 18;

With syllable division after the second member where there is no morpheme division after the first 2 members. These clusters were ty.c, h0.p, ny.s, yv.t; \lambda tihityhity.cik \rangle They stacked them HSI p. 2; \lambda ti emate + nye tah0.pitcik \rangle Only the ones on the ground are left HSPD p. 1; \rangle wany.sivece velewi: cnyik \rangle Their thoughts were alike (compound) SR p. 17; \rangle 0 am + um tel-wa: yv.tik \rangle No more of those marriages 9JA p. 3:

4 member clusters in E3 occurred with syllable and morpheme division after the first member and morpheme division but no syllable division after the second member. These clusters were combinations of prefixes. These sequences are v.skw, c.skw: \left\[\pm \pi \cdot \skwik \pm \pi \cdot \skwik \left\[\pm \pi \pm \skwik \pm \pi \cdot \skwik \left\[\pm \pi \pm \pi \skwik \pm \pi \cdot \skwik \pm \pi \cdot

The majority of 3 member clusters occurring in citation and which did not occur in texts in E3, had a syllable and morpheme division after the first member and just a morpheme division between the second and third members. In most of these cases the second and third members were k+w~y.

There are examples in citation of the same phoneme sequences occurring which occurred in texts, but in citation there was a morpheme division between the second and third members which was not the case in the same phoneme sequence in texts. These will be starred when illustrated. There is a morpheme division between the second and third members when the syllable division is after the first member. There were three examples of a syllable division occurring after the second member and in two of these cases, there was a morpheme division between the first two members. A morpheme and syllable division between the first two members and a morpheme division and no syllable division between the second and third members will be given two stars.

With S as first member: **nyi0ác hát cimát.kws He
buried the dog; **mác.kws They are eating; **wác.kyu They
are sitting; ?.spo?.yu I know C,C p. 3. (the sequence ?.sp
here is an example of another 3 member cluster with syllable and
morpheme division after the first member but no syllable or
morpheme division after the second. Since the first
morpheme in this example in the initial cluster is a first

an N is the first member.

With L as first member: \(\psi \all_{\text{lwim}}\) How many? BS p. 23; \(\psi \nyu + \klaip \) nyuk \(\klaip \) lyúk \(\psi \text{They flatten it 7C p. 8; \psi \text{tana} \cdot \lambda \) \(\lambda \klaip \text{tana} \cdot \lambda \) \(\lambda \klaip \text{tana} \cdot \lambda \klaip \) \(\lambda \klaip \text{tana} \cdot \lambda \text{tana} \cdot \text{tana} \text{tana} \cdot \text{tana} \text{tana

With SC as first member: \psi twa.y.nyim \psi Later 9C p. 5;

With syllable division after the second member where there is a morpheme division between the first two and last two members, only 1 example occurred and y was initial:

\[\kan mahaym.ku+nye \left\] You white people SR p. 18;

With syllable division after the second member where there is no morpheme division after the first 2 members. These clusters were ty.c, h0.p, ny.s, yv.t; \tihityhity.cik \to They stacked them HSI p. 2; \to tu emate +nye tah0.pitcik \to Only the ones on the ground are left HSFD p. 1; \to wany.sivece velewi: cnyik \to Their thoughts were alike (compound) SR p. 17; \to 0 am + um tel-wa: yv.tik \to No more of those marriages 9JA p. 3:

4 member clusters in E3 occurred with syllable and morpheme division after the first member and morpheme division but no syllable division after the second member. These clusters were combinations of prefixes. These secuences are v.skw, c.skw: \pimev.skwik mev.skwik \pi They stand and stand HSI p. 13; \pimev.skwie \pi The poles of the house, literally - they stand the houses up one by one Buff, p. 11;

person prefix, ?-, any other 3 member initial clusters in stems are also produced.) cic_kyé:ţik They cut meat C, C; **tət_spá:y_kw He cleans them G. p. 14 here SC as a first member occurred; tst_swi-kw He scrapped them G, p. 21;

With F as first member: 05.wvcah.ny When they are going to have the baby C,Cp. 7; *nyi0ác yi+kwí0.kwɛ He's holding it; nyi+kwáyə cim5·cinc p5·s.kyu To lose a shirt costs money; *wivim titn5·v.kyu They hit each other with stones;

Another 3 member cluster with F as first member: ciná.h.k-wi He kills them 6B p. 6; **ciyáv.kwi He ordered it G, p. 5;

With N as first member: OútOúțim_kyu It's beginning to itch; **mam cinálcin nya wícin_kws I was hit because of you; tám_kws I throw it; cəɔ́n_kwi He traps them G, p. 5; cicám.kwi He hit them 6B p. 3;

With L as first member: nyác kwé: v kwimo cinál.kwin I was hit by something; wál.kyu He is looking;

With SC as first member: yútssmiyáy.kwí+ny He got tricked; kuvnáw.kwí+nya He left it there;

With a syllable and morpheme division after the second member and morpheme division between the first two members: nyim+5yk.00 If you'll bring it; támk.00 If you'll throw it:

With no morpheme division between the first two members: $t=lwayv_k$ To marry (a woman).

With a syllable division after the second member and morpheme division between all 3 members: yá:mi·nk0 If he will go C, C p. 12; nyim-yámk.0 If you go C, C p. 63;

With a syllable division after the first member and morpheme division between all three members: $\theta \circ w \cdot v \cdot c$ ahnyim Then they will have the baby C,C p. 7; spóm.?yu I remember kəkáv.kwinyə He began it; wi·m.kwi He's beginning C, C p. 40;

Of course, this gives only the clusters occurring in the corpus. There are numerous other possible clusters which could occur in E3 or other Es, in the following ways:

1. These could be computed from word IPS and IPS charts in ll by combining all the consonants there which may occur stem final and stem initial which may combine with all the prefixes and suffixes which have final and initial consonants. This would result in more 2 and 3 member clusters; 2. In addition, all the prefix and suffix sequences which may combine would yield additional possible 2 and 3 member clusters in the same manner; 3. All the clusters produced by free variations of elided vowels in between consonants in connected speech:

Some were included here. 4. Finally, compounds in 13. and 14. could be included. Some were included here and marked.

Conclusions for E3: Medial 2 and 3 member clusters occur here. The only initial 3 member cluster was ?.sp. In E3, as in E1 and E2, 2 and 3 member clusters occurred in less

of a variety than in E2 but more than in E1. The following manner class combinations occurred in text and citation: Only S occurred with all manner classes. However, there was only one example of 1 as second member with S as first, and it only occurred in citation. F, N occurred with S, F, N, SC and SC, L only with S, F, SC. In texts, only S occurred with all manner classes; F with only F, S. N occurred only with S, N, and SC, L, only with S, F, SC. L as a second member did not occur in texts. In citation, clusters which did not occur in texts included the following manner class combinations: Only S occurred with all manner classes, F only with S, N, SC. N with F, S, SC. L did not occur in any combinations in citation that did not occur in texts, and SC only occurred with S, SC. SL, NF, andNSC occurred in citation but did not occur in texts.

In order of frequency of occurrence, texts and citation had the same orders for first members: S, N, F, SC, L. For second members, though, text had S, F, N, SC, L and citation had S, SC, (F or N), L.

9.3.2 2 member clusters occurring in E4 in final position in texts with S as first member: /nyu+klapk //It was flattened there 7C p. 8; /tu meputc // Just dust Buff. p. 19; /pa+nye wico+kw //They do it all 5J p. 11;

With F as first member: √sm2:cik céwewa:vc √They slept in the tent DWTI p. 4;

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9.3.2 2 member clusters occurring in E4 in final position in texts with S as first member: /nyu+klápk /It was flattened there 70 p. 8; /tu mepútc / Just dust Buff. p. 19; /pá+nye wico+kw /They do it all 5J p. 11;

With F as first member: √smá:cik cówewá:vc √They slept in the tent DWTI p. 4;

With N as first member: √nyûkəmk √It's on the other side

DWT2 p.3; √ kik+ûkcinc ↑ The meeting 12J p. 5; √ yə?ha:nk √

I fixed it HJI p. 4;

With L as first member: I mut hwalk? They dig a hole 8L p. 1; pulm when it's wet 1 J p. 1;

With SC as first member: $\sqrt{mi0kw6yk} \sqrt{\text{Hurry up Buff.}}$ p. 9; $\sqrt{\text{kw6:wc}} \sqrt{\text{Meetings Buff p. 19}}$; $\sqrt{\text{tu qace w6:wk}} \sqrt{\text{Just}}$ a little dumb Buff. p. 22; $\sqrt{\text{nyava kha:yv}} \sqrt{\text{It will be different}}$ DWTI p. 1; $\sqrt{\text{kw6ecminyave} \sqrt{\text{miova kha:yv}}} \sqrt{\text{They chew it 8C p. 6}}$; $\sqrt{\text{tema.yh}} \sqrt{\text{They are ambitious 5C p. 9}}$; $\sqrt{\text{kwe +nyihayl}} \sqrt{\text{A}}$ different kind of soup 6C p. 8;

Three member final clusters in E4: \$\sqrt{\text{kicky6:yvk}}\$\sqrt{\text{A}}\$ lot of women standing there HSI p. 4; \$\sqrt{\text{nyiham kak automobilyc}}\$\text{\text{L}}\$
At that time there were no autos DWTI p. 3; \$\sqrt{\text{kut} = pankitayvc}\$\sqrt{\text{L}}\$
The old men of long ago 13J p. 7;

An initial 3 member cluster from citation: skwit ika To turn or twist around C, C, p. 2;

2 member medial clusters occurring in texts in E4:

| kwie wimo wico +kwi+nye | What was it they used? L) J p. 1;
| nyu ku+vwik| That's what they do 1 J p. 1; | nyu+vyicim | Something like that 1 J p. 2; | yi:co +kyuk0oh | It was like that 5 J p. 5;

2 member initial clusters in texts in E4: $\sqrt{\text{mwice}} \sqrt{\text{You}}$ did it Buff. p. 26; $\uparrow \text{myuci} \sqrt{\text{You}}$ all think that IC p. 1; $\sqrt{\text{scd} \cdot \text{cik}} \sqrt{\text{they put poles in DWT2 p. 2a; } \sqrt{\text{sqdmke}} \sqrt{\text{to hit with}}$

With N as first member: $\sqrt{\text{nyúkemk}} \sqrt{\text{It}}$ s on the other side DWT2 p.3; $\sqrt{\text{kik+úkcinc}}$? The meeting 12J p.5; $\sqrt{\text{ye?hd:nk}}$! I fixed it HJI p. 4;

With L as first member: $\sqrt{mat hwalk}$ They dig a hole 8L p. 1; $\sqrt{pulm}\sqrt{When it's wet 1}$ J. p. 1;

With SC as first member: $\sqrt{mi0kw6yk}$ Hurry up Buff.

p. 9; $\sqrt{kw6:wc}$ Meetings Buff p. 19; \sqrt{t} tu qace \sqrt{t} Just

a little dumb Buff. p. 22; \sqrt{t} nyava khacyv \sqrt{t} It will be different

DWTI p. 1; \sqrt{t} kwee cimnyavym \sqrt{t} They chew it 8C p. 6;

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\int \text{kw\(i\)} \text{w\(i\)} \text{w\(i\)</sub> \text{w\(i\)</sub> \text{w\(i\)</sub> \text{w\(i\

2 member initial clusters in texts in E4: \$\lambda\$ mwice \$\lambda\$ You did it Buff. p. 26; \$\hat{\text}\$ myici \$\lambda\$ You all think that IC p. 1; \$\lambda\$ scaecik \$\lambda\$ they put poles in DWT2 p. 2a; \$\lambda\$ sqamke \$\lambda\$ to hit with

a fist PNNN; /spul / It soaks HSPD, p. 1; /vwik/ He does it CA p. 6; /vynm / It is happening LS p. 9;

2 member clusters in E4 which occurred in citation but not in texts only occurred finally: hwale They are planting taytavk Real old.

Conclusions for E4: In texts, the majority of clusters occurring here are 2 membered and final. Only 7 medial clusters occurred and only 4 three member clusters occurred finally, and only 4 two member clusters occurred initially. SC had the widest distribution in E4 finally in 2 member clusters, occurring with all other manner classes as a first member while S, N, F as first members finally occurred only with S.

L occurred with S and N. Only 2 clusters occurred in citation that didn't occur in texts: Final 1c and vk. In order of frequency of occurrence as first members in a 2 member cluster: SC, N, F, S, L; as second members: S, N, F, L, SC. The 3 member non-initial clusters were SCFS, LFS, SCNSC. The 2 member medial clusters were: k, v+w, y. The initial 2 member clusters were: v~m+w, y, s+c, p, q. The initial 3 member cluster was askw.

/0. Vowel clusters are relatively infrequent in Havasupai.

Only 2 and 3 member clusters occurred. These clusters may be divided into 3 types: 1) Those that were created as a result of morphophonemic free variation in which an intervocalic consonant except ? was elided; 2) Those that were created as a result of a transitional vowel; 3) Those that were natural.

a fist PNUM; /spul / It soaks HSPD, p. 1; /vwik/ He does it CA p. 6; /vyum / It is happening LS p. 9;

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Type 1 and 3 clusters may, in turn, be divided into those that occurred within and across morpheme boundaries.

Two member vowel clusters which occurred in type 1 across morpheme boundaries: \(\frac{1}{2} \) ky\(\frac{1}{2} \) it will happen PDLS

p. 11; -i here is the future suffix which is -hi in citation; \(\frac{1}{2} \) titny\(\frac{1}{2} \) that's where they went to school DWTI p. 13, -o here is the transformative suffix -wo in citation.; \(\frac{1}{2} \) the one that was there Buffalo p. 19; this is a fast speech version of nyikiyows in citation; \(\frac{1}{2} \) pite vak -way\(\frac{1}{2} \) in they lived here 4C p. 5; -i here is verb transformative; \(\frac{1}{2} \) nyi ci\(\frac{1}{2} \) it starts from here Buffalo p. 38; the sequence \(\frac{1}{2} \) implies 71.2, distributive goal prefix.

Type 1 clusters within morpheme boundaries: thu qélia:yvict

Just bad ones 4C p. 5; in citation ia: was ya: for this

morpheme; twi+kwi:u+kwi:u kwi+kwi:lcik they kept pulling it

13J p. 5; In citation this is kwiwk To pull.

Only medial 2 member clusters occurred in type 1.

Type 2 clusters, of course, only occurred within morpheme boundaries: $\downarrow kw\acute{\underline{e}\underline{e}}$ kav-yúicivc \downarrow It's something like that DWT2 p. 5; $\downarrow wici\underline{e}$ tik \downarrow They finished it DWT2 p. 11; $\downarrow kav+ici\acute{\underline{e}}$ k $\downarrow Why$ did they say it? BS p. 16; $\downarrow y\acute{\underline{u}\underline{e}}$ ieim \downarrow I wanted to, I said BS p. 37; $\downarrow tel\acute{\underline{i}}:i\eta-wi$ ieim+ $\acute{\underline{e}}$ 5:pok \downarrow They wanted me to sign it, but I didn't Buffalo p. 37;

Medial and final clusters occurred in type 2. The second member is most frequently \check{a} , but \check{i} also occurred.

Type 3 clusters within a morpheme boundary: \səamcim \tag{They closed it DW II p. 1; \dag{pay səulcim \tag{They tore it all down 4C} p. 3; \dag{hak0isl \tag{Salt-water (Cameron)} Buffalo p. 28; \dag{luiluik \tag{They put them in line BS p. 10; \dag{talanwi i0im+a5:pok \dag{They wanted me to sign it, but I didn't Buff. p. 7;

Type 3 clusters across morpheme boundaries: \k\25:tivim \
They were on the edge SR p.3; \v\2012v\2012v\2012v\2012v\2012 They did the same things for us DWT2 p. 10; \v\2012p\2012v\2012 Women PW p. 2; \v\2012v\2012v\2012 They rode PW p. 2; \v\2012v\2012c\2012tc\2012 They didn't think of that Buffalo p.33; \v\2012ti+ny\u00fct\2012 m\2012v\2012 You go to school BS p. 37.

Type I clusters which occurred across morpheme boundaries where there was free variation: \kak pat am pat kawica tam It was hard Buffalo p. II; \swata swata hand wici taum I They don't sing good PDLS p. 6; \kak vaha:nim mətas p I wonder if the next one will be good PDLS p. 8; \pat as pat as p It's hard BS p. 10. (Here s, u and a, a freely vary.) \subseteq uage about Det me see it Buffalo p. 13; \subseteq uitam I They saw it Buffalo p. 26; (here a, i freely vary.)

Type 3 clusters in which there was no free variation: hméoki+nyə
They cured here3J. p. 6.

Type 3 clusters within morpheme boundaries only occurred medially. Type 3 clusters across morpheme boundaries occurred initially, medially and finally.

The constituents of two member clusters by type is as follows:

Type I with F)ront V)owel as first member within morpheme boundaries:

Medial and final clusters occurred in type 2. The second member is most frequently \check{a} , but \check{i} also occurred.

Type 3 clusters within a morpheme boundary: \səamcim \text{\frac{1}{2}}

They closed it DW II p. 1; \shap pay səulcim \text{\frac{1}{2}} They tore it all down 4C

p. 3; \shap hak@iel \text{\frac{1}{2}} Salt-water (Cameron) Buffalo p. 28; \shap luiluik \text{\frac{1}{2}}

They put them in line BS p. 10; \shap təlinywi i@im+a5:pok \shap They wanted

me to sign it, but I didn't Buff. p. 7;

Type 3 clusters across morpheme boundaries: kɔɔ́:tivim land they were on the edge SR p.3; land wiociok land they did the same things for us DWT2 p. 10; land paquiv land Women PW p. 2; luicliv land to they rode PW p. 2; licats land think of that Buffalo p.33; lithnyūtə məú: lyou go to school BS p. 37.

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Type 3 clusters in which there was no free variation: hmézkítnya
They cured her 3J. p. 6.

Type 3 clusters within morpheme boundaries only occurred medially. Type 3 clusters across morpheme boundaries occurred initially, medially and finally.

The constituents of two member clusters by type is as follows:

Type 1 with F)ront V)owel as first member within morpheme boundaries:

ia, iu; across morpheme boundaries: £3, iu,; B)ack V)owels across morpheme boundaries: 5i.

Type 2 within morpheme boundaries, FV: \$\varphi\$, ia; BV: ua.

Type 3 within morpheme boundaries, FV: \$\varphi\$, au, ia; BV: ui, a),

Type 3 across morpheme boundaries, FV: io, ii, au, ao, au, ao.

BV: ao, uə, ui.

There were only three 3 member clusters which occurred in words in texts. Of these three, one combined types 1 and 2 within morpheme boundaries and another was type 1 across morpheme boundaries.

Type 1 and 2: 7 kwál + aidtaúm / He doesn't want to do it again

CA p. 11. (In citation, a is initial in the morpheme stem yi- To happen.

The second adoes not occur in citation but is a transitional vowel, a

feature of connected speech. The vowel cluster then was made by these
factors plus the complete elision of y.)

Type 1: √ sp5kə hána təśiyu √ I didn't remember DWT2 p. 11; (təśiyu is təśpiyu in citation.)

The third 3 member vowel cluster occurred initially and is type I and III across morpheme boundaries: $\sqrt[3]{}$ uui $\sqrt[3]{}$ I saw it PW p. 2. (ui here is uwi in citation.) Therefore, there are no natural 3 member clusters in Havasupai and very few natural 2 member vowel clusters. By natural I mean not the result of morphophonemic elision of vowels in connected speech.

11. There were 25 different syllable types recorded in the texts. Of these, 17 were variations of canonical shapes of C and V combinations caused by occurrence of SC in the same or different slots than those

in which C occurred. Below is a list of these syllable types in order of frequency of occurrence with the C and V combinations in numerals and the particular variations of that combination given in sub-letters following the numerals, also in order of frequency of occurrence:

1.CV, a. SCV; 2. CVC, a. SCVC, b. CVSC, c. SCVSC;
3. V. a. VC b. VCC; 4. CVCC, a. CVCSC, b. CVSCC; 5. CCV,
a. CSCV; 6. CCVC, a. CSCVC; 7. CCVCC, a. GSCVCC, b. CCVCSC,
c. CCVSCC, d. CSCVSCC, e. CSCVCSC; 8. CCCV, a. CCSCVC,
b. CCSCVCC.

It is clear that alternating sequences of C and V are much preferred in Havasupai over any clusters of C or V within the syllable and word. The average word in Havasupai, in the texts, was between 3 and 4 syllables. The longest word in the text was 6 syllables and the shortest was 1 syllable. There was only one six syllable word in the text. For example: $\sqrt{\frac{1}{1}}$ hal pa ciyú:mcio+kwi+nyə $\sqrt{\frac{1}{2}}$ They sent them there BS p. 24. The shortest word was: $\sqrt{\frac{1}{2}}$ tú $\sqrt{\frac{1}{2}}$ Just Buffalo p. 30.

The longest morpheme that was a word was 3 syllables:

\$\sqrt{pom kieff ic}\$ Male coyote Buffalo p. 20. The alternating C V sequence in words is a characteristic mainly of 3 syllable words. Beyond that, due to affixation, sequences of clusters will occur more frequently.

11.1 The following give IPS for all these syllable types. These statements are deficient in 3 respects: 1. only IPS of what V say, occur in what syllable types are given, except for CV and CVC, which are more elaborate, and not wat V occurs with what consonant in particular syllable types; 2. The stress conditions for the particular V are not

given. 3. Only examples of occurrences in contour initial, medial and final are given. If anyone cares to fill these IPS, the data is ready for them.

The environment is the word. Read V_1 as V syllables in word initial; V_m as word medial. So $C_1C_2V_1C_3$ would be CCVC syllables in word initial and C_1 would be initial C and C_3 the C after the V_1 and so on.

V₁: all V; VC: i, u, α, ε; p, k, c, v, m, n, η, 1, y; VCC: umk; V_m: all V; VC: all V but a; p, v, n, m, 1, y; No VCC.

V_f: a, a, i, α; VC: all V but α; p, t, k, c, v, m, γ, 1, y; VCC: i, ε, a; m, k, n, s, 1, m, v, n, y.

For the particular consonant cluster combinations in the following syllable types see 9.

 $C_1C_2V_1$: all V; C_1 : t, k, q, v, s, h, m, n; C_2 : p, h, m, n, 1, y, w, t; w, y was most frequent.

 $C_1C_2V_m$: all V but ϵ ; C_1 : s, k, v, m, n; C_2 : w, y, 1, p, c; Only one example of 1. With a SC as second member in initial position, all V but a occurred. With no SC as second member, all V occurred. With SC as second member medially all V but ϵ occurred. With no SC only a occurred medially; $C_1C_2V_f$: u, a, i; C_1 : k, n, v; C_2 : w, y.

C₁C₂V₁C₃: All V; C₁: k, c, q, t, s, h, m, n; C₂: t, q, p, m, n, l, w, y. w, y were most frequent. C₃: all C but q, η.

M: (M and F will now stand for CCVC medially and finally); all V but

c; C₁: k, h, s, n; C₂: w, y, p, m, s. One example each for p, m, s;

C; t, c, m, n, θ, v, l; F: All V but ε, θ; C₁: k, q, n, η, v, s, h;

C₂: p, y, w, m, g only one example each of p, m, g. C₃: θ, t, c, k, m, n, 1. With a SC as second member initially all V occurred. Without SC as second member all V but u occurred. With SC as second member medially all V but ε, ο occurred. Without SC as second member medially, only u, ε occurred. Finally, with SC as second member all V but ε occurred. Without SC as second member finally only u, i occurred.

C₁V₁C₂C₃: All V; Cl: all stops but ?, no N or L. Just θ, s, h, y, w; C₂: h, n, v, l, m, w, y; C₃: k, c, θ, v, m, l, y. M: kony, hank, wayv; F: All V; C₁: All C but η; C₂: n, v, l, y, k, t, w; C₃: c, k, y, v, η, w, n.

 $C_1C_2V_1C_3C_4$: All V but o; C_1 : t, k, \bullet , s,h, m, n; C_2 : w, y, c, 1; C_3 : y, w, m, n, v, 1; C_4 : k, c, y, m, l. M: No medial CCVCC. F: nyimc, hmunc.

C₁C₂C₃ V (Only occurs initially): u, i, ε, ο; sny, skw, sky, hmt, ?sp.

C₁C₂C₃V₁C₄: These may occur initially and finally. The CCCV are the same as those above that only occur initially plus a suffix except for hmt; With a suffix as C₄: snyu+v, m, c, k, skyə+l, skwi+k,. ll.2 See charts 1, 2, 3 for IPS of CV and 4, 5, 6 for IPS of CVC. All IPS of CVC syllables initially, medially and finally in the word under and (and (a) is included in are given in charts 4, 5, 6 above. No examples are given.

In order of frequency of occurrence, the most productive vowels in all environments were: a, i, u, o, a. All vowels occurred initially

and finally under and finally under odidn't occur initially under and a occurred there only twice. There were very few occurrences medially under and under medially a didn't occur.

The following generalizes the charts for CVC as to occurrence of manner classes onsets with codas in combination with vowels and also gives the most frequent combination of onset - codas as to manner classes. I' stands for a CVC initially in the word under primary stress; M', medially in the word unstressed and so on.

The combinations will be given as follows: I': S-A-io means that stops as first members in I' combined with all manner classes and the vowels i, o did not occur with S as onset. If all manner classes did not occur as codas, just the letter designating those manner classes that did occur will be given. If all vowels occurred in a given CVC, no vowels will be given. The order of codas is not significant.

I': S, F, N, SC,-A, N-o; (This means all but L occurred with all codas and all but N occurred with all vowels. M didn't occur with o here) L-S, SC-i, s, o.

I': S, F-S, F, N, L; L, -ε; N-F; N-u, ε, ɔ, ə; (L didn't occur as a first member here) SC - S, L, N, - ɔ.

M': S-S, F, L. -ə; F- all but L -ə; N- all but SC- ɔ, ə; L- S, SC -i, u, ε, ɔ; SC -A.

M': S-S, F, N- ε, ο; F-NF-ε, ο, α, ə; N-S, N- u, ε, ο, α, ə; L-N, F- u, ε, α, ə; SC-S - u, ε, α, ə (very few occurrences here).

F': S, N, SC-A, N-ə. F-all but SC-ə; L-S, N,- ϵ , α , ə;

F': S, N=A; F-all but SC-ε; L-N, F, S,-ε; SC-all but F-ε.

The following gives frequences for each manner class as onsets.

I': S, SC, F, N, L: I': S, F, SC, N, L

M': SC, S, F, N, L: M': S, (F, N equal), L, SC

F': SC, S, (F, N, L, about equal): F': S, (F, N, SC about equal) L

The following gives frequencies for manner class as codas combining with onsets. Read S-S, F, N, L, SC as S occurred with S more times as onsets and codas respectively than F, N, L, SC, in that order. Parentheses about sequence means they were equal or near equal. If a class is omitted it didn't occur.

I': S-S, N, F, (SC L): F-S, N, (F, L) SC; N-(S, N, F, L, SC); L-S, SC: SC-S, (F, N), L, SC.

I ': S-N, (F, S) L; F-(N,F), S, L, SC: N-(F, N); SC-S, N, L;
M': S-S, F, N, L; F-N (F, S); N-(S, N, F, L); L-(S, SC);
SC-(N, S), (F, SC, L);

M³: S-(S, N), (F, L); F-(N, F): N-(S, N): L-(N, F) SC-S;
F': S-S(N, F), (SC, L); F-(S, N,), (F, L); N-S, N, (F, L, SC);
L-S, N; SC-S, F, N, (L, SC).

F: S-S, M, (F,L), SC; F-(S, N), (F, L); N-S, (F, L); N, SC; L-S(F, N); SC-S, N, L, SC.

In summary the favorite CVC type in all positions appears to be SaS. Although for particular environments this varies. For example in M´ the favorite CVC would be SCáN.

In CV syllables, vowels occurred in the following order of frequency of occurrence. If a vowel is omitted, it has not occurred.

I': i, a, u, ε, ɔ; I': ə, i, a, u, ɔ, ε; M': α, u, i, ε, ɔ;
M': i, (ə, a), u, ɔ; F': (i, a) ε, u, ɔ; F': ə, (i, a) ɔ, ε, u.

The most productive vowels in all environments in order of frequency: i, a, u, (ε, z) a.

The most productive under ': i, a, u, ε, ο, θ.

The most productive under : θ, i, α, (u, σ), ε.

The following gives combinations of manner class and vowels.

Read -V as those vowels didn t occur there: S and F occurred with all vowels in all positions; N:I' - \(\epsilon\), I' - \(\epsilon\), D: M' - \(\epsilon\); M' - \(\epsilon\), u, \(\text{o}\);

F' - \(\text{o}\); F' all V; L: I' - i, \(\epsilon\), \(\text{o}\); I' - i, \(\epsilon\), \(\text{o}\); M' - \(\epsilon\), \(\text{o}\); M' - i;

F' no vowels occurred; F' - u, \(\epsilon\); SC occurred with all vowels except \(\text{o}\) in I' and M' and F' only with \(\text{o}\).

All S, F, SC occurred I, M, F, with 'and '. All N but n occurred everywhere. Also n, 1 did not occur in F'.

In order of frequency of occurrence, I, M, and F under 'and'; S, F, SC, N, L. This is the order in all positions except F where the order is S (SC, N) F, L.

In the section on consonant allophones, 8-8.1, it was shown that all consonants but t, η occur initially in the contour and all consonants including t, η occur medially in the contour. In each manner class section except for the stops, it was shown that nasals, liquids and semi-consonants also occur finally in the contour. Of the fricatives, only v, h were shown to occur finally both in the contour and word, while s, θ only occurred finally in the word but medially in the contour and in this position occurred only once.

The only distributions in the contour, then, that need to be given here are stops in the final position: f icol m6:t ℓ I think they said

The following gives frequences for each manner class as onsets.

I': S, SC, F, N, L: I : S, F, SC, N, L

M': SC, S, F, N, L: M': S, (F, N equal), L, SC

F': SC, S, (F, N, L, about equal): F': S, (F, N, SC about equal) L

The following gives frequencies for manner class as codas combining with onsets. Read S-S, F, N, L, SC as S occurred with S more times as onsets and codas respectively than F, N, L, SC, in that order. Parentheses about sequence means they were equal or near equal. If a class is omitted it didn!t occur.

I': S-S, N, F, (SC L): F-S, N, (F, L) SC; N-(S, N, F, L, SC); L-S, SC: SC-S, (F, N), L, SC.

I': S-N, (F, S) L; F-(N,F), S, L, SC: N-(F, N); SC-S, N, L;

M': S-S, F, N, L; F-N (F, S); N-(S, N, F, L); L-(S, SC);

SC-(N, S), (F, SC, L);

M : S-(S, N), (F, L); F-(N, F): N-(S, N): L-(N, F) SC-S;

F': S-S(N, F), (SC, L); F-(S, N,), (F, L); N-S, N, (F, L, SC); L-S, N; SC-S, F, N, (L, SC).

F: S-S, M, (F,L), SC; F-(S, N), (F, L); N-S, (F, L), N, SC; L-S(F, N); SC-S, N, L, SC.

In summary the favorite CVC type in all positions appears to be SaS. Although for particular environments this varies. For example in M' the favorite CVC would be SCaN.

In CV syllables, vowels occurred in the following order of frequency of occurrence. If a vowel is omitted, it has not occurred.

I': i, a, u, ε, ɔ; I': ə, i, a, u, ɔ, ε; M': a, u, i, ε, ɔ;
 M': i, (ə, a), u, ɔ; F': (i, a) ε, u, ɔ; F': ə, (i, a) ɔ, ε, u.

it Buff. p. 29; ∱ kak háne teó:p lt's not good Buff. 9; √ ?icikí îm+ic √ They always said it] p. 2; ∱ wakši slók Jelly from the spine of the cow 7C p.]; ↓ 6ak -wá:q ∤ They started running there Buff. p. 26; ↓ wakši? civsó? ↓ Cow's rib 7C p. 1.

In the section on vowels, 8.2, it was shown that all vowel phonemic norms occurred medially in the contour. In this section, contour initial and final occurrences of vowels will be given.

All vowels occurred initially in the contour; \(\tilde{u} \) \(\tilde{u} \)

All vowels occur finally in the contour: \(\times \text{kankyác homá} \times \)

One of the sons Buff. p. 16; \(\text{ 6am myú: c2} \) They were coming back

Buff. p. 2; \(\text{ phát, a t2} \) It is hard Buff. p. 40; \(\text{ ciyú } \) They

were coming Buff. p. 40; \(\text{ yúcika: } \) That's the way they do it 4C

p. 5; \(\text{ wa+nyil+otúi } \) The stove goes inside the house 5C p. 5.

12. Much of the morphophonemics in Havasupai is simple free variation.

However, what alternations are not freely varying include all the possible types: phonologically conditioned automatic and non-automatic and morphologically non-automatic. These alternations were found in the style of direct and non-direct eliciting situations. Whatever these styles are, if any other style was used, I doubt if there would be any automatic alternations. That is, in any other style I don't think there

would be any restrictions on phoneme co-occurrences. For validation of automatic alternations see the IPS section in the phonology. What is automatic refers to a particular closed corpus i.e. the content of those IPS sections.

The allomorphs 70, 91, 241.1, (see 13.1.1 for inventory) belonging to the plural goal distributive morpheme, and the allomorphs 141, 241.1, 241.2, 71.3, belonging to the plural actor morpheme, will be discussed in the morphology section in 14.2. 141, 241.2, 91, 71.3 are all morphologically conditioned. 241.1 is the only allomorph in this group wholly phonologically conditioned. However, I thought it best to describe its distribution with its member allomorphs in the morphology section. The alternations of 71.1 and 71.2 include both automatic and non-automatic phonological conditioning and morphological conditioning. That is, some of the suballomorphs of 70, e.g. 71.1.1 and 71.1.2, 71.2.1 and 71.2.2 freely vary and some do not freely vary with respect to the vowels in these sub-allomorphs. These alternations are phonologically conditioned and non-automatic. However, the alternations of the main allomorphs, 71.1 and 71.2, combine phonological and morphological non-automatic and automatic alternations with respect to their initial consonants and the initial consonants of bases or roots with which they 101 and 121 are the only other affixes in the corpus which have automatic alternations.

It will be suggested in 14.2 that the plural goal allomorphs are also allomorphs of the plural actor morpheme.

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It will be suggested in 14.2 that the plural goal allomorphs are also allomorphs of the plural actor morpheme.

fast speech which, except in certain cases, apply to all allomorph alternations. The first has to do with, e.g. an allomorph $C_2^{V_2}$ which may occur in a sequence $C_1^{V_1}C_2^{V_2}C_3$ where V_2 may be elided in free variation producing the sequence $C_1^{V_1}C_2^{V_2}C_3$ where $C_2^{V_1}C_2^{V_2}C_3$ where $C_2^{V_1}C_2^{V_2}C_3$ where this occurrs, the C allomorph will be listed and illustrated. It will be listed and illustrated for affixes 101, 121, 111, 141. In addition, in the sequence $C_1^{V_1}V_2$ where $C_1^{V_1}$ is an affix, the V_1 may be elided in free variation producing a C_1 allomorph. An example of this is affix 91. This elision will be illustrated in the examples for affix 161.

The second rule applies to all affixes except those with a vowel o in one allomorph, e.g. \$1, 135, 161, 191, 231 and all affixes in F₂ (see ahead) and all affixes without allomorphs. All other affixes have a ((±)) allomorph in unstressed position which in certain cases freely varies medially with all the other allomorphs in a given affix and in all cases freely varies finally with C and CV allomorphs. In some but not all cases where this allomorph freely varies medially, it will be listed and illustrated. In all cases where it is not listed or illustrated it is to be understood that the affixes have this allomorph medially and finally in all occurre nees. It will not be illustrated when it occurs in final position.

fast speech which, except in certain cases, apply to all allomorph alternations. The first has to do with, e.g. an allomorph C_2V_2 which may occur in a sequence $C_1V_1C_2V_2C_3$ where V_2 may be elided in free variation producing the sequence $C_1V_1C_2C_3$ where C_2 becomes the allomorph of C_2V_2 . In some, but not all, cases where this occurrs, the C allomorph will be listed and illustrated. It will be listed and illustrated for affixes 101, 121, 111, 141. In addition, in the sequence $C_1V_1V_2$ where C_1V_1 is an affix, the V_1 may be elided in free variation producing a C_1 allomorph. An example of this is affix 91. This elision will be illustrated in the examples for affix 161.

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12.1.1 A fixed alternation, F_1 , refers to any affix with two or more allomorphs where neither one has \tilde{e} as a vowel and one allomorph is restricted to certain environments in which the other has not occurred, in the corpus, and vice versa. However, in all these environments, under weak stress, they both alternate with \tilde{e} . Also in F_1 , \tilde{e} may have an environment in which no other allomorphs have substituted for it.

 $_{\rm c}$ F $_{\rm c}$ refers to any affix with only two allomorphs where the second is C $_{\rm e}$ and the other may be C or CV and C $_{\rm e}$ did not substitute for these in some environments.

 F_3 refers to any alternation where two or more allomorphs which do not have a as a V may, but not necessarily, vary with each other but not with \bullet .

A freely varying alternation, FV, refers to an alternation of a and the V of other allomorphs and also to any two or more allomorphs having the shapes CV~CV or C~CVorCC~V where in at least two of the allomorphs the V is not and where these may alternate with each other in the same phonological environment and, in this environment, and also alternate with the V of the other allomorphs. FV also refers to any two allomorphs in which the Cs alternate with each other. It may be that for certain fixed alternations, under weak stress, alternations not now freely varying may freely wary in some future corpus. However under strong stress I doubt if any alternation regarded as fixed here will become freely varying in some future corpus.

Members of F_1 are: 30, 40, 81, 135, 220, 33, 161, 132, 251, 61, 84, 101, 102, 112, 121. Members of F_2 are: 62, 51, 52. Members of F_3 are: 170, 181. Members of FV are: 21, 82, 83, 103, 111, 91, 134, 151, 191, 192, 211, 201, 231, 234, 235, 232, 53, 54 and all affixes occurring with N. All other affixes in the corpus have no other allomorphs. 82, 83, 111, 21, 231, 54 include all the possible kinds of alternations of the others in FV and therefore only these will be illustrated. 12.1.2 Alternations of 30 are: 31.1~31.2 before C. They do not occur before V. Only 31.3 occurs before V: inyá + ?-spó-?-yu (N + 31.1-V-181-222) I know it C, p. 3; î-spó-nye (31.2-V-235) I knew it DWT1, p. 6; α -5:-v-ce (31.3-V-121-141) We are hopeless BS, p. 28.

Only 32.1 occurs before C. Before y it freely varies with 32.2. 32.1 did not occur before w. Before all other C when not preceded by another syllable it freely varied with 32.3. When preceded by another syllable, 32.1 freely varied with 32.2. 32.2 only occurred before w, y when not preceded by another syllable. When preceded by a syllable it may occur before all other C. Only 32.4 occurred before V.

Examples for 32 are: mi-c-nali-m (32.1-51-V-234) you dropped it C, p. 5; mi-yú-hi-n-yû (32.1-V-171-182-222) you are C, p. 58; mi-tatha:t (32.1-V) you work C, p. 5; m-yú-ci (32.2-V-141) you all think J3, p. 8; (m-wi-ci (32.2-V-141) you all do it C, p. 5; wê-m-ci-pá-m (11-32-51-V-234) you

12.1.1 A fixed alternation, F_1 , refers to any affix with two or more allomorphs where neither one has \tilde{e} as a vowel and one allomorph is restricted to certain environments in which the other has not occurred, in the corpus, and vice versa. However, in all these environments, under weak stress, they both alternate with \tilde{e} . Also in F_1 , \tilde{e} may have an environment in which no other allomorphs have substituted for it.

 F_2 refers to any affix with only two allomorphs where the second is Cə and the other may be C or CV and Cə did not substitute for these in some environments.

 F_3 refers to any alternation where two or more allomorphs which do not have $\ddot{\nu}$ as a V may, but not necessarily, vary with each other but not with $\ddot{\nu}$.

A freely varying alternation, FV, refers to an alternation of a and the V of other allomorphs and also to any two or more allomorphs having the shapes CV~CV or C~CV or C~V where in at least two of the allomorphs the V is not and where these may alternate with each other in the same phonological environment and, in this environment, and also alternate with the V of the other allomorphs. FV also refers to any two allomorphs in which the Cs alternate with each other. It may be that for certain fixed alternations, under weak stress, alternations not now freely varying may freely wary in some future corpus. However under strong stress I doubt if any alternation regarded as fixed here will become freely varying in some future corpus.

all go away C, p. 8; wé-mi-ci-pá-m (ll-32.l-51-V-234)
you all go away C, p. 7; ma-tathá:t (32.3-V) you work
C, C; ma-úni-n (32.4-V-182) you see it C, p. 8.

Alternations of 40 are: only 41.1 occurred before v, p: ku-pé-n-c ((41.1-V) \rightarrow N-312-321) the one who lives 13J, p. 7; ku-v-táy ((41.1-53- $V\rightarrow N$) the big one 70, p. 1. Only 41.2 occurred before all other C except where it freely varied. with 41.1 and 41.3: $ki-y\acute{a}:-m$ ((41.2-V-112) \rightarrow N) the one who goes PW, p. 18; ki-cáw-ve-h ((41.2-V-121) \rightarrow N-313) the one who fights C, p. 12; ki-tá:y-v-c ((41.2-V) \rightarrow N-311-321) the old one 13J, p. 7; ki-new $((41.2-V) \rightarrow N)$ the one who kills C, p. 6. These last four examples show some C before which only 41.2 occurs. Before w, 41.1, 41.2, 41.3 freely vary: k_0 -wie-hwali-m ((41.3- N-V) \rightarrow N-234) miner LS, p. 12; ki-wá-ha ((41.2-V) \rightarrow N-313) the one sitting C, p. 12; ku-wa-c- ϵ ((41.1-V-141-233) \rightarrow N) The one sitting? C, p. 5. Before a cluster of Cw, 41.3 and 41.1 freely vary. 41.2 only occurred before mV and here it freely varied with 41.3: ku-mwe-me-m ((41.4-V-112-234) \rightarrow N) the spring C, p. 5; $kq - mwa - ka - \Thetaa - m$ ((41.3-V-211-192-234) \Rightarrow N) the soft one CA, p. 5; ku-hwál-c ((41.1-V) \rightarrow N-321) the farmer C, p. 7; ka-hwaka-c ((41.3-P) N-321) the two of them C, p. 9. (I do not believe that the alternations here of 41.1 and 41.3 are morphologically conditioned, although I have no evidence for this. Only the first alternation occurrs with a V from the

Members of F₁ are: 30, 40, 81, 135, 220, 33, 161, 132, 251, 61, 84, 101, 102, 112, 121. Members of F₂ are: 62, 51, 52. Members of F₃ are: 170, 181. Members of FV are: 21, 82, 83, 103, 111, 91, 134, 151, 191, 192, 211, 201, 231, 234, 235, 232, 53, 54 and all affixes occurring with N. All other affixes in the corpus have no other allomorphs. 82, 83, 111, 21, 231, 54 include all the possible kinds of alternations of the others in FV and therefore only these will be illustrated. 12.1.2 Alternations of 30 are: 31.1~31.2 before C. They do not occur before V. Only 31.3 occurs before V: inyά + ?-spó-?-yu (N + 31.1-V-181-222) I know it C, p. 3; î-spó-nye (31.2-V-235) I knew it DWT1, p. 6; α-ó:-v-ce (31.3-V-121-141) We are hopeless BS, p. 28.

Only 32.1 occurs before C. Before y it freely varies with 32.2. 32.1 did not occur before w. Before all other C when not preceded by another syllable it freely varied with 32.3. When preceded by another syllable, 32.1 freely varied with 32.2. 32.2 only occurred before w, y when not preceded by another syllable. When preceded by a syllable it may occur before all other C. Only 32.4 occurred before V.

Examples for 32 are: mî-c-náli-m (32.1-51-V-234) you dropped it C, p. 5; mi-yú-hi-n-yû (32.1-V-171-182-222) you are C, p. 58; mì-tâthá:t (32.1-V) you work C, p. 5; m-yú-ci (32.2-V-141) you all think J3, p. 8; (m-wi-ci (32.2-V-141) you all do it C, p. 5; wê-m-ci-pá-m (11-32-51-V-234) you

same sub-class, Vis222. Until more information is received I am letting it stand as phonologically conditioned.) The following alternations of 41.2 and 41.3 before m is with a V of the same sub-class, Vis222: ki-mú ((41.2-V) \rightarrow N) the new one C, p. 5; ka-mi-c ((41.3-V) \rightarrow N-321) the tall one C, p. 8. 41.4 alternates with 41.2 before y and 41.1, 41.2 and 41.3 alternate before w. When preceded by a syllable all three other allomorphs freely alternate with 41.4. For examples of 41.2 before y and 41.2, 41.3, and 41.1 before w see examples above: k-yá-m ((41.4-V-112) \rightarrow N) one who goes SR, p. 4; k-wi-cu-c ((41.4-V-141) \rightarrow N-321) the ones who did it C, p. 6; nyi-k-mú:-c ((21-41.4-V) \rightarrow N-321) when the one who moved away...C, p. 6.

135.1 freely varied with 135.2 finally, but only 135.1 occurred medially: i-mo (V-135.1) I think so FW, p. 12; i-mo-y (V-135.1-181) I think so BS, p. 32; i-m (V-135.2) I wonder BS, p. 7;

allomorphs: 133.1 and 161.1 only occur after V. 133.2 and 161.2 also occur after V but only when the V is i. All the other occurrences of 133.2 and 161.2 are only after C. After i then 133.1, 161.1 and 133.2, 161.2 freely vary in their respective allomorphs. 133.3 and 161.3 occur only after V and in this position freely vary with the other allomorphs which may occur after V. Only 133.1 and 161.1 occurred finally:

same sub-class, Vis222. Until more information is received I am letting it stand as phonologically conditioned.) The following alternations of 41.2 and 41.3 before m is with a V of the same sub-class, Vis222: ki-mú ((41.2-V) \rightarrow N) the new one C, p. 5; ka-mi-c ((41.3-V) \rightarrow N-321) the tall one C, p. 8. 41.4 alternates with 41.2 before y and 41.1, 41.2 and 41.3 alternate before w. When preceded by a syllable all three other allomorphs freely alternate with 41.4. For examples of 41.2 before y and 41.2, 41.3, and 41.1 before w see examples above: k-yá-m ((41.4-V-112) \rightarrow N) one who goes SR, p. 4; k-wi-cu-c ((41.4-V-141) \rightarrow N-321) the ones who did it C, p. 6; nyi-k-mú:-c ((21-41.4-V) \rightarrow N-321) when the one who moved away...C, p. 6.

135.1 freely varied with 135.2 finally, but only 135.1 occurred medially: i-mo (V-135.1) I think so FW, p. 12; i-mo-y (V-135.1-181) I think so BS, p. 32; i-m (V-135.2) I wonder BS, p. 7;

allomorphs: 133.1 and 161.1 only occur after V. 133.2 and 161.2 also occur after V but only when the V is i. All the other occurrences of 133.2 and 161.2 are only after C. After i then, 133.1, 161.1 and 133.2, 161.2 freely vary in their respective allomorphs. 133.3 and 161.3 occur only after V and in this position freely vary with the other allomorphs which may occur after V. Only 133.1 and 161.1 occurred finally:

wi-we (V-161.1) he makes her do it J3, p. 9; wi-wo (V-133.1) he does it for her 8C, p. 1; tatha:t-o-m (V-133.2-234) he works for me LS, p. 13; hothot-c-o-k (V-141-161.2-211) they make it pointed 5C, p. 1; wi-o-k (V-133.2-211) he did it for them, C, C; 1 wi-ci-o-k (V-141-161.2-211) they make him do it the same way 6C, p. 8; mé-w-ci-k (V-133.3-141-211) they eat for them C, p. 8; mé-w-m (V-161.3-234) they make her eat J3, p. 11.

132.1 occurred everywhere except medially after o where it freely varied with 132.2 and after u where only 132.2 occurred: yó-y-k (V-132.1-211) she gets it again 9C, p. 5; yó-i-k (V-132.2-211) she gets it again C, C; ú-i (V-132.2) he sees again C, p. 10; (yú-i-k-yu (V-132.2-211-222) he is again C, p. 42.

Only 222.1 and 221.1 occurred medially. Finally, they freely varied with 222.2 and 221.2 respectively: 01.-k-wi (V-211-221.1) he drinks it C, C; (01.-k-w (V-211-221.2) he drinks it C, C; yú-k-yu (V-211-222.1) it is C, p. 23; yú-k-y (V-211-222.2) it is C, C. (When 222.2 and 221.2 occur they are heard as a palatalization and labialization, respectively, of the preceding consonant.) tə-5:p-k-yú-nyə (84-V-211-222.1-235) they didn't C, p. 5; má-c-wí-nyə (V-141-221.1-235) they ate it C, p. 14.

Only after V, 251.1 freely varies with 251.2 finally: Θ_{i-co} ? $V-251.1 \rightarrow V$ a bar C, C; Θ_{i-co} $V-251.2 \rightarrow V$ a bar

CA, p. 9. 251.3 only occurs after m and 251.4 only after u. 251.5 only occurs finally and only after C: wa-m-po (V-112-251.3 \rightarrow N) a train 4C, p. 3; seam-po (V-251.3 \rightarrow N) a door 5C, p. 5-6; tú-i (V-251.4 \rightarrow N) the heat 5C, p. 4; nya-top-o (N-V-251.5 \rightarrow N) the West PW, p. 15; nya-c-al-o (N-311- $V-\rightarrow$ N) The East BS, p. 36.

Sl.1 only occurred before y: s5-y5-k (1.1-V-211)

I pull it PW, p. 4; Sl.2 occurred everywhere else: s-púl
(81.2-V) it soaks HSPD, p. 1.

Only 84.1 occurred before V. It freely varied with 84.2 everywhere else: tə-ɔ̂ti-k-wi (84.1-V-211-221) he props it up G, p. 1la; tə-qám-k-wi (84.1-V-211-221) he bumped it C, C; ti-qám-k-wi (84.2-V-211-221) he bumped it C, C.

61.1 occurred only before v, w: ku-vnéw-k (61.1-V-211)
he lifts it 5J, p. 12; ku-wá-m-k-wi (61.1-V-112-211-221)
he drives it C, C. 61.2 occurs everywhere else: ki-ná-k-wi
(61.2-V-211-221) he points to it G, p. 8; kí-tkó-k-wi
(61.2-V-211-221) he tied it C, C; ki-káv-k-wi (61.2-V-211-221)
he buys it G, p. 11; kí-ci-níl (61.2-71.2-V) he jumps them
C. C. Only 61.3 occurred before V: kə-óţi-k (61.3-V-211)
he is walking on the edge C. C.

102.1 only occurred before w: vi-yá.-ţɔ-wi (62-V-102.1-221) it blows away C, p. 62. 102.2 occurred everywhere else: ti-tinyú-ţi-k (84-V-102.2-211) he writes them HSL, p. 5; (wi-ţi-ci (V-102.2-141) they finish it B, p. 20.

The alternations of 101 and 121 are taken together here because they both illustrate an automatic alternation. No clusters of vv or pv occurred in the corpus. When 101 occurs with 121, it is represented by 101.1 and 121 is represented by 121.1, so only pp clusters occurred.

Only 121.3 and 101.3 occurred finally but freely alternated with 121.2 and 101.2 respectively, medially: té-te-ká-v (71.1-84-V-101.3) They gather them DWT2, p. 3; $ti-k_{k-v-k-wi}$ (84-V-101.3-211-221) he gathers it C, p. 10; ti-ká-vi-k-wi (\$4-V-101.2-211-221) he gethers it C, p. 10; titm5-v (V-121.3) it is scratched C, p. 9; té-tam5-v-ci-k-yu (71.2-V-121.3-141-211-222) they are scratched C, p. 9; ti-tmó-vi-ci-k-yū (71.1-V-121.2-141-211-222) they are scratched C, p. 9. When 101 and 120 cc-occur 101.1 and 121.1 occur in sequence. This is the only automatic alternation, except for the allomorphs of 70, in the corpus: ti-ká-p-p-ci-k-yu (84-V-101.1-121.1-141-211-222) They are gathered C, p. 10. 101.2, 3 freely vary everywhere else. 121.2, 3 also freely vary everywhere else. Only 121.1 occurs after m: tət-səim-pi-k-yu (71.2-242-V-121.1-211-222) They are closed C, p. 6. 121.4 freely varies with all other allomorphs of 121 except 121.1: 01-wi-k (V-121.4-211) he drinks it LS, p. 8; Θ i-v (V-121.3) he is drinking BS, p. 9. 12.1.3 Examples of F, follow: 51, 52, 62 never freely vary with a before c, y. In all other

environments they freely alternated with a. Only 52.3 occurred before V; ci-yá-m-ci-m (51.1-V-112-141-234) they send them HSL, p. 5; ci-c-nal-ci-k-wi (51.1-71.2-V-141-211-221) they dropped them G, p. 6; ca-pa-k (51.2-V-211) he goes out C, C; ci-pá-ci-k (51.1-V-141-211) they go out B, p. 16. 52 did not occur before y: yi-c-hán-k-wi (52.1-71.2-V-211-221) he fixes them G, p. 11; y_{α}^{2} ?- ϵ v-ci-k (52.3-V-141-211) they understand BS, p. 33; yi-hán-k (52.1-V-211) he fixes it 7C, p. 8; yə-hán-k-wi (52.2-V-211-221) he fixes it C, p. 11; vi-c-nam-k-wi (62.1-72.1-V-211-221) he sews them C, p. 7; vi-yá-m-ci-m (62.1-V-112-141-234) they run IS, p. 4; vi-nám-k-wi (62.1-V-211-221) he sews them C, p. 7; və-nám-k-wi (62.2-V-211-221) he sews it C, p. 7. 12.1.4 Examples of F3 follow: Only 171.1, 171.4 and 171.2 freely varied medially everywhere except before y. Only 171.2 and 171.3 freely varied before y and only 171.4 occurred finally: wi-hu-we (V-171.1-221) he will do it C, C; wi-hi-we (V-171.2-221) he will do it DWT2 p. 4; kyú-i-yu (V-171.3-222) it will happen PDLS, p. 11; ká0-hi-yu (V-171.2-222) I will call C, p. 10; pí-h (V-171.4) they will die J3, p. 9; 96w-v-ca-h-nyi-k (V-121-141-171-201-211)

181.1 and 181.2 freely varied medially except before y where only 181.1 occurred. 181.1 and 181.3 freely varied finally and medially everywhere: yi-hi-?-yu (V-171-181.1-222)

when she will have the baby. 51, 17.

environments they freely alternated with 5. Only 52.3 occurred before V; ci-yá-m-ci-m (51.1-V-112-141-234) they send them HSL, p. 5; ci-c-nal-ci-k-wi (51.1-71.2-V-141-211-221) they dropped them G, p. 6; ce-pa-k (51.2-V-211) he goes out C, C; ci-pá-ci-k (51.1-V-141-211) they go out B, p. 16. 52 did not occur before y: yi-c-hán-k-wi (52.1-71.2-V-211-221) he fixes them G, p. 11; $y_{k}^{2}?-\epsilon v-ci-k$ (52.3-V-141-211) they understand BS, p. 33; yi-hán-k (52.1-V-211) he fixes it 7C, p. 8; ya-hán-k-wi (52.2-V-211-221) he fixes it C, p. 11; vi-c-nám-k-wi (62.1-72.1-V-211-221) he sews them C, p. 7; $vi-y\acute{a}-m-ci-m$ (62.1-V-112-141-234) they run LS, p. 4; vi-nam-k-wi (62.1-V-211-221) he sews them C, p. 7; və-nam-k-wi (62.2-V-211-221) he sews it C, p. 7. 12.1.4 Examples of F₃ follow: Only 171.1, 171.4 and 171.2 freely varied medially everywhere except before y. Only 171.2 and 171.3 freely varied before y and only 171.4 occurred finally: wi-hu-we (V-171.1-221) he will do it C, C; wi-hi-wə (V-171.2-221) he will do it DWT2 p. 4; kyú-i-yu (V-171.3-222) it will happen PDLS, p. 11; káQ-hi-yu (V-171.2-222) I will call C, p. 10; pí-h (V-171.4) they will die Js, p. 9; 96w-v-co-h-nyi-k (V-121-141-171-201-211)

181.1 and 181.2 freely varied medially except before y where only 181.1 occurred. 181.1 and 181.3 freely varied finally and medially everywhere: yi-hi-?-yu (V-171-181.1-222)

when she will have the baby. 51, 17.

I will C, p. 24; yó-y-m (V-181.2-234) they get it BS, p. 4; ú-i (V-181.3) I see it LS, p. 9; má-? (V-181.1) I eat it C, C; yú-i-k (V-181.3-211) I am coming CA, p. 3; yú-?-yu (V-181.1-222) I am C, p. 11; wá-?-k-yu (V-181.1-211-222) I live C, p. 9.

12.1.5 FV alternations follow:

21.1-21.5 freely alternate. This is more of a sub-class of FV since 21.4 only occurs when it's the second syllable in a sequence. But this is the only alternation of this type: nyi-vá-mi-m (21.1-V-112-234) when he arrived DWT1, p. 13; nya-vá-m (21.2-V-112) when he arrives LS, p. 16; nyu-válewáqe-m (21.3-V-234) when it's the same HSPD, p. 5; nyi-válewáqe-m (21.1-V-234) when it's the same HSL, p. 2; nye-vá-m (21.5-V-112) when he arrives C, C; wæ-n-ci-pá-m (11-21.4-51-V-234) when it comes out HSL, p. 4.

Free alternations of 54 are: v-yú (54.2-V) it is LS, p. 18; va-yú (54.1-V) it is CA, p. 7; vi-yú (54.3-V) he is LS, p. 13; va-yú (he is (54.4-V) DWT2, p. 10.

lll.1-3 freely varied, everywhere: yú-kə-k (V-111.2-211)

I turned CA, p. 4; vó-ki-k (V-111.1-211) I returned 1C, p. 3;

vó-k-kə (V-111.3-211) I returned C, C; vó-k (V-111.3) I

returned 4C, p. 7; vó-ki (V-111.1) I returned HSL, p. 14;

vó-k (V-111.2) I returned C, C;

82.1, 83.1 and 82.2 and 83.2 and 231.1 and 231.2 freely varied everywhere in their respective allomorphs: sûv-k5:-ci (82.1-V-141) they fenced it SR, p. 8; sev-k5-ci (82.2-V-141)

they fence it C, pg. 5: tuv-k5-k-wi (83.1-V-211-221) he blocked it

C, pg. 4; təv-k5-kə (83.2-V-211) he fenced it C, pg. 4; nəw-ɔ

(V-231.1) if it s heavy? C, pg. 14; nəw-θ> (V-231.2) if it s heavy

C, C.

All the other FV affixes have allomorphs whose distributions are similar to 82, 83, 21, 111, 231, 54. These other affixes in FV will not be illustrated.

I will C, p. 24; yố-y-m (V-181.2-234) they get it BS, p. 4; ú-i (V-181.3) I see it LS, p. 9; má-? (V-181.1) I eat it C, C; yú-i-k (V-181.3-211) I am coming CA, p. 3; yú-?-yu (V-181.1-222) I am C, p. 11; wá-?-k-yu (V-181.1-211-222) I live C, p. 9.

12.1.5 FV alternations follow:

21.1-21.5 freely alternate. This is more of a sub-class of FV since 21.4 only occurs when it's the second syllable in a sequence. But this is the only alternation of this type: nyi-vá-mi-m (21.1-V-112-234) when he arrived DWT1, p. 13; nya-vá-m (21.2-V-112) when he arrives LS, p. 16; nyu-válawáqa-m (21.3-V-234) when it's the same HSPD, p. 5; nyi-válawáqa-m (21.1-V-234) when it's the same HSL, p. 2; nya-vá-m (21.5-V-112) when he arrives C, C; wæ-n-ci-pá-m (11-21.4-51-V-234) when it comes out HSL, p. 4.

Free alternations of 54 are: v-yú (54.2-V) it is LS, p. 18; va-yú (54.1-V) it is CA, p. 7; vi-yú (54.3-V) he is LS, p. 13; va-yú (he is (54.4-V) DWT2, p. 10.

lll.1-3 freely varied, everywhere: yú-kə-k (V-111.2-211)

I turned CA, p. 4; vó-ki-k (V-111.1-211) I returned 1C, p. 3;

vó-k-kə (V-111.3-211) I returned C, C; vó-k (V-111.3) I

returned 4C, p. 7; vó-ki (V-111.1) I returned HSL, p. 14;

vó-k (V-111.2) I returned C, C;

82.1, 83.1 and 82.2 and 83.2 and 231.1 and 231.2 freely varied everywhere in their respective allomorphs: $\hat{\text{suv-k5:-ci}}$ (82.1-V-141) they fenced it SR, p. 8; $\hat{\text{sev-k5-ci}}$ (82.2-V-141)

CHART 1

CV- Initially in the word under primary stress. (All occurrences of primary stress with a here and in the other charts is with the allophone as except in those environments referred to in the text where a did and did not freely vary with a.)

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CHART 1A

CV- Initially in the word under weak stress. Secondary stress is included here.

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CHART 1

CV- Initially in the word under primary stress. (All occurrences of primary stress with a here and in the other charts is with the allophone as except in those environments referred to in the text where a did and did not freely vary with a.)

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+	+	+		+	+
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CHART 1A

CV- Initially in the word under weak stress. Secondary stress is included here.

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ņ						
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W	+		+		+	
У	+	+	+			+

CHART 2

CV- Medially in the word under primary stress.

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CHART 2a

-CV- Medially in the word under weak stress.

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CHART 3
-CV Finally in the word under primary stress.

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y						

CHART 3a

-CV Finally in the word under weak stress.

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ţ								-	

CHART 3

-CV Finally in the word under primary stress.

	i	u	ε	၁	æ	Э
q		+			+	,
p t k	+	+	+		+	+
С	+		+	+		
q ?	+	+	+	+	+	+
v s	+	+		+	+	
θ	·		+		+ +	
h m	+	+	+		+	
n		+			+	
ņ 1						+
w Y	+	+	++		+	7
J						

CHART 3a

-CV Finally in the word under weak stress.

			+	+	+	+
p t	+		+		+	+
	+	+	*	+	+	+
k			/- +	+	+	+
C	+	+	τ	1	·	+
a	+					
q ?	+	+	+	+	+	+
v	+			+	+	+
S						
θ	+	+		+		+
h	+				+	
	+		+	+	+	+
m		+	+	+	+	+
n	-1-	•	•			
ŋ					+	+
1	4-			+	-	
W	+	+	-i-	+	+	+
	+	+		+	+	+
У			•		+	+
نڙ						

CHART 4

CVC- Initially in the word under primary stress. In this and the following CVC charts, onsets are in the margin and codas in the squares. Read Ap as that CVC under secondary stress. The order of codas here is unimportant.

	i	ű.	ε	, ວ	a	ə
p ÷	cmlt0h	νc	mqv		°vycm nk	s
t	cvk	°kvm	mk	pk	myvt0 pl	
k	nl	t	n	m	kyvnln	
С	cθ	tvk	ml		mykvn	W
q			ck		c	
9						
٧		c		kmc	kmpt	W
s	vlt	kl			yvl	
е	kmnv	1			lkm	w
h	tk	m		1t	tenmvy kn	
m	ktm	1			nktclm yvh	
n					ml	
ŋ						
1	÷	k		.	p	w
W	klcmvt	k	nv		kylm°v hn	ษ
У	tkc	kmnc?	k	hknvm	mckl	v

CHART 4a

CVC - Initially in the word under weak stress.

	į	u	ε	၁	a	ə
p		^ 1	n^k^s		Amjian k	
t	nkt	vk	snt		Λt Λv Λη h	vlstθm
k	cnl0t	vm			n nlvk	^m,1
С	cvmk	νννm			ν kνm	
q ,					۸c	m
9						
Δ.	m	m	^ k		lv?n	
S	$^{h_{t_{j}k}}$					km
θ					lkm	mv
h			^ \nabla		malakaya?	m
m	θ				nno t yvl	v
n						
ŋ						
1						
w		n^k		A	n^k, ?m	
У	Atac k	^m^k^l^c	^1		∧ ½ /2?	1.9

CHART 5

-CVC- Medially in the word under primary s	VC- Medially	in	the	word	under	primary	stress.
--	--------------	----	-----	------	-------	---------	---------

	i	u	ε	၁	:	ə
უ 1	t	l v	:		v0mky	
t k c	nc :	٧	. ·		pvt hm	
q ?						
V					\mathbf{v}_{\cdot}	
s	v			yn		
θ	\mathtt{n} .					
h	vt			t	\mathtt{ntm}	
m	mc	1				
n		n n			1°vh	
ņ l					p	w
M	nemt			mc	уt	W
y .	n	1		nv	ymvl	t

CHART 5a

-CVC- Medially in the word under weak stress.

p k	72
t k	
n n en	1
nkm.	
- ^V	
· ● 1 · · · · · · · · · · · · · · · · ·	
n mn?	
그 그는 그 그 그 그 그 목가 있다. 그는 그는 그 그 그들이 되었다고 있는 그를 하는 말리면 나를 하고 있다. 그렇게 함께 없는	
t nm of a significant and the contract of the	

CWC- Initially in the word under weak stress.

	i	u	ε	၁	a	Ð
p		^ n	^k^s		Ang m k	
t	nkt	νk	snt		Ang an k At Ay Ang h	vlstθm
k	cnl0t	v m			nlvk	^ m,1
С	evmk	$\mathbf{v}_{\mathbf{v}}$			^k^m	
q					۸c	m
9						
v	m	m	^ k		lv?n	
s	"t, k	v			~ ~	km
Θ					llem	mv
h			٧V	4	malakayas	m
m	θ			^	n^0 t yvl	v
n						
ņ						
1						
W		n^k		А	nAk, ?m	
у	¹ t ⁿ c	amakalac	^1		1 k/2	19

CHART 6

-cvc	C Final	ly in the	word u	nder pri	mary stres	S •
	i	u	ε	5	æ	Э
P		k	mk		mnykl	•
t	vk	mv	lk		yel	W
k	n	νc	k	k	v	mk
c	k	h			cw	
q	n				c	
9					4. N. W.	
v		mk			ckmvl	
s	vn			n	νk	
6	n				cktm	
h		m	k		lckmv	
m	cmvkn	ck	k	k	kytl vmnc	
n					vml	
ŋ						
1	c	kn		k		
W	mkl v°c	k	kν	k	kytv lmw	wl
y	• •	khm	kv	kmvc	mky lev	W

CHART 5

-CVC-	- Me	dially	in	the	word	under	primar y	stress.
	i	ι	1		ε	၁	:	θ
t	t]					v0mky	
k c	nc k		/				pvt ?hm	
g ?							v	
v s	v					уn	V	
θ h	n vt		_			t	ntm	
m n	m c		l n				l°vh	
ņ l	10 a ro +					mc	yt yt	W W
y. W	nemt n	:	1			nv	ymvl	t

CHART 5a

-CVC- Medially in the word under weak stress. y t k \mathbf{k} k 1 n q c ? h $\eta\,km$ v nņ ន θ v h m n mņ° ņ 1 ٩v W ٨c y nm

CHART 6a
-CVC Finally in the word under weak stress.

	i	u	ε	9	à	ə
p	kn	k		n, k n	1	mn
t	kmcnlv	vm,^l		k	сy	m°k
k	lmnkt,"t	c c		"v"l"m"n	C	mpkv
c	mkvncn lt	mvkcl	۸۸	vc Alamap Acanak	hc? lt	lkhmcv
q	qk					m
9						
٠ ٧	mkl ntc	kmc			1]vm	kvm
s	m					
θ	km			h		m
h	kmc					mk
m	kln	kv	h	và vc awk	.^k	mk
nī.	m k ŋ mkl nev	ky*c		^1	k	
ŋ						
1	mk	vkm		v A uk	c	${f k}$
W	vn kct m,/1 "k	k	. •	^ k^m'l		
y	kmc	k mc		"k"m "l		
<u>ታ</u>	kcmn	vk		lkc	cm	m

CHART 6

-CV	C Finally	in	the	word	under	primar	y stre	55.
	i	u		ε	;)	a	0
р		k		mk		I.	nykl	
t	vk	mv		lk			yel	W
k	n	vc		ŀc		k	v	mk
С	k	h					cw	
q	n						С	
9								
v		mk				(ckmvl	
s	νn					n	vk	
θ	n	1					cktm	
h		M		lc			lckmv	
m	cmvkn	ck		k			kyt1 vmnc	
n							vml	
ŋ							¥ ,1.14 galay	
1	c	kn				k		
W	mkl	k		lcv		k	kytv lmw	wl
У	v°c ,	khm lvc		kv	kmvo	;	mky lev	W

13. There are two types of morphemes in Havasupai: syntax and affix. A word in Havasupai is any utterance which may occur in isolation as a free utterance. The constituents of a word are either one type of a syntax morpheme which optionally co-occurs with affixes as a word or another type of syntax morpheme which obligatorily occurs with affixes in order to occur as a word.

Affixes are defined as those morphemes the majority of whose rules of arrangement with each other and with particular syntax morphemes do not necessarily include the rules of arrangement for the syntax morphemes themselves. Syntax morphemes may be defined as those morphemes which remain when the affix rules have been formulated. Havasupai, when single words are successively taken out of connected speech, rules may be formulated for the major part of the affix cooccurrences and affixes with appropriate form classes, but not rules for form class co-occurences are necessarily implied by these affix rules, or need be given in affix and affix-form class co-occurence rules. That is, there is a residue of morphemes whose co-occurence have not been given. These are syntax morphemes. The difference between affix and syntax morphemes is that affixes are not necessarily interdependent in the sense that the majority of the organization rules for affixes in a given corpus can be given, independently, of syntax morphemes, when single words are taken out of connected speech. It would only be in the extreme case of agreement or dependencies between affixes across

word boundaries where this distinction between affix and syntax morpheme becomes blurred and rules of arrangement for both these types of morphemes would plausibly unite in one rule.

There have been examples given of affixes occuring as free forms and therefore as words. If any affix can be a free form then any sequence of morphemes occurring as a single word which is traditionally cut as a syntax morpheme plus affixes does not contain affixes, in the traditional sense, at all. If all affixes can be syntax morphemes, in this sense, then there is no problem in defining affixes. There just aren't any by the definition of a word as a single free form, and also by the definition given here. There would only be a class of syntax morphemes. /3./ The affix inventory for Havasupai is given below in 13.1.1. class with which each affix occurs is listed alongside. For sub-classes see appropriate sections. I haven't glossed the formatives because I find it difficult to do so. The criteria for membership in a decade is mutual exclusiveness with its members and order of occurrence in an affix sequence. At times these criteria weren't coordinate and then only order of occurrence was the criterian for inclusion in a decade. example, 60 + 80 did not co-occur in the corpus, but since 60 occurs before 70 and 80 after 70, 60 and 80 were separated. In addition, 51 occurs before 61 but only 51 and 52 occur before 70 and none of 50 occur with 80; but since 60 also occurs before 71.2 and 70 before 80, 50 was separated from 80. Similarily, 150 doesn't occur with 170, but 150

occurs before 160 and 170 after 160 so 150 had to be separated from 170.

The prefixes are grouped so that the lowest decade is furthest from the syntax morpheme and the suffixes are grouped so that the lowest numbered decaderare closest to the syntax morpheme. I think it is clear that decade 10 precedes decade 20 and so on when co-occurring within an affix sequence in a word.

In four cases in the corpus a higher decade suffix number precedes a lower one. 71.2 precedes 62 with bases and follows it with roots.

In the sequence 51-62, 71.2 follows 51.

136 and 151 always occur after 250 but before 211 and 211 follows
250. Since 250 is a transformative decade and 151, 136, 211 are common
V affixes, 151, 136 and 211 are grouped before 250.

I grouped all affixes which only occurred with N and transformed V in the 300 decade although 234, 211, 222, 111 all followed decade 300.

13.1.1 Words are constructed by affixation and/or compounding.

There are three types of affixes: prefixes, suffixes and operators.

Prefixes may have any one of the following five functions and certain prefixes may have two functions. They may function as 1) Formatives (81 to 84, 51, 52, 61, 62) which obligatorily occur with a particular type of syntax morpheme before that morpheme can be grouped into a form class; 2) Transformatives (41, 43, 250) which transfer syntax morphemes from one form class to another; 3) Status-quo (81, 84, 51, 52, 61, 62, 85) which optionally occur with syntax morphemes,

occurs before 160 and 170 after 160 so 150 had to be separated from 170.

The prefixes are grouped so that the lowest decade is furthest from the syntax morpheme and the suffixes are grouped so that the lowest numbered decade are closest to the syntax morpheme. I think it is clear that decade 10 precedes decade 20 and so on when co-occurring within an affix sequence in a word.

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deriving syntax morphemes from other syntax morphemes which may, in turn, remain in the same form class or change sub-class; 4) Distributive goal prefixes (70) which transitivize intransitive roots and bases and which mark goal and plural actor in transitive roots and bases; 5) Inflectional prefixes: all the rest of the prefixes in the inventory. Note that some prefixes had a dual function as formatives and status-quo morphemes: 81, 84, 51, 52, 60.

Suffixes have all the functions of prefixes plus three more: intransitivizing (121); marking transitive (221) and intransitive (222) roots and bases. The formative suffixes are 101, 102, 112. The transformatives are decade 250. The status-quo affixes are 100, 110. The goal suffix is 91 which also transitivizes intransitive roots and bases and marks plural actor. All the other suffixes are inflectional. Of the inflectional suffixes only 112 occurs as status-quo and formative. Note also that 100 functions both as a formative and status-quo affix.

Operators have three functions. The operator of replacement in 241.1 has a triple function as a plural actor marker, a transformative and as a plural goal distributive. 241.2 only occurs as a plural actor affix. The operator of word order, 243, is a transformative affix. No transformative occurred with any other form class but V. The operator of reduplication, 242, is an expressive morpheme of intensification. (71.3, V*, was included with 70 above.)

```
ĨĨO.
   11.
                                V
         we-
                      away
20.
                                               V, N, P
                      dependent temporal
   21.1
         nyi-
   21.2
         nya-
   21.3
         nyu-
   21.4
   21.5
         nyə-
30.
   31.1
                      lst person
                                      V, N, P
           ? -
   31.2
          i-
   31.3
          a-
   32.1
                      2nd person
         mi-
   32.2
          m-
   31.3
          ma-
   32.4
          mə-
 40.
   41.1
          ku-
                                  V, P
                      agent
   41.2
          ki-
   41.3
          ka-
   41.4
          k-
 50.
   51.1
                      formative
          ci-
   51,2
          cə-
   52.1
                      formative
          yi-
   52.2
          yə-
   52.3
          ya?-
                                     V
   53
                      becoming
          va-
   54.1
                      marker
                                   V, N, P
          va-
   54.2
          v-
   54.3
          vi-
   54.4
 60.
        Formatives
    61.1
          ki-
    61.2
          ku-
    61.)
          kə-
    62.1
          vi-
    62.2
```

```
Plural goal distributive / plural actor/transitivizer
70.
  71.1.1
                    V, P
  71.1.2
            tə-
  71.1.3
            ti-
  71.1.4
            to-
  71.2.1
            ci-
  71.2.2
            cə-
  71.2.3
  71.3
            \mathbf{v}.
80.
       Formatives
   81.1
            so-
   81.2
            8-
   82.1
            suv-
   82.2
             897-
   81.1
            tuv-
   83.2
            tav-
   84.1
            ti-
   84.2
             to-
   85
             θa-
90.
             -ci plural distributive goal/plural actor/ transitivizer
   91.
100.
        Formatives
  101.1
            - p
                    V
  101.2
            -vi
  101.3
            -v
  102.1
            -ţo
  102.2
            -ti
  103
            -n
        Formatives (with only V as formative or status-quo, with V, N, P
110.
                       as inflectional)
  111.1
            -ki
  111.2
            -ka
  111.3
            -k
  112
            -m
        Intransitivizer with Vt/with Vi
120.
   121.1
                    V, P
            - p
   121.2
            -vi
   121.3
            -v
   121.4
            -wi
```

```
130.
  131.1
                 Inceptive
                                V, N, P
           -m
  131.2
           -i
  132.1
                 Again
           -у
  1 32.2
            -i
                  Benefactive
  133.1
            cw-
                                    11
  133.2
            -5
  133.3
            -w
  134.1
            -nyi
                  Also
  134.2
            -nyu
  134.3
            -n
                  Doubtful
  135.1
            -mo
  135.2
            -m
  136
            - 1
                  Into
140.
                   Plural actor
                                     V, N, P
  141.1
            -ci
  141.2
            -cu
150.
  151.1
                   Past
                             V, N, P
            -ti
  151.2
            -t
160.
                                  V, N, P
   161.1.
            cw-
                   Causative
   161.2
            - ၁
   161.3
 170.
                               V, N, P
   171.1
             -hu
                   Future
   171.2
             -hi
   171.3
             - i
   171.4
             -h
 180.
                                      V, N, P
   181.1
             - ?
                    First person
   181.2
             -y
   181.3
             -j
                    Second person
   182
             -ŋ
 190.
   191.1
                                 V, N, P
             -pl
                    Appears
   191.2
             cw-
                    Awhile
   192.1
             -0i
   192.2
             -hə
                    Only
                              P
   193
             -θə
```

```
130.
                                V, N, P
                  Inceptive
  131.1
            -m
  131.2
            - i
                  Again
  132.1
            - y
  1,72.2
            - i
                  Benefactive
  133.1
            cw-
                                     11
  133.2
            - ၁
  133.3
            - w
  134.1
                  Also
            -nyi
  134.2
            -nyu
  134.3
            -n
                  Doubtful
  135.1
            -mo
  135.2
            -m
  136
            - 1
                   Into
140.
                                     V, N, P
                   Plural actor
  141.1
            -ci
  141.2
            -cu
150.
                             V, N, P
                   Past
   151.1
            -ti
   151.2
            -t
160.
                                   V, N, P
                   Causative
   161.1
             cw-
   161.2
             c -
   161.3
             - w
 170.
                                V, N, P
                    Future
   171.1
             -hu
             -hi
   171.2
   171. 3
             - i
   171.4
             -h
 180.
                                      V, N, P
             - ?
                    First person
   181.1
   181.2
             - y
   181.3
             -1
                    Second person
   182
             -ŋ
 190.
                                  V, N, P
                    Appears
             -5l
   191.1
   191.2
             cw-
                                   . •
   192.1
             - Oi
                    Awhile
    192,2
             -hə
                    Only
                              ₽
    193
             - θə
```

```
200.
                    Dependent temporal
                                             V, N, P
  201.
           -nyi
210.
                     Predicative
                                     V, N, P
  211.
           -ki
220.
                     Transitive marker
                                            V, N, P
  221.1
            -wi
  221.2
            -w
                     Intransitive marker
  222.1
            -yu
  222.2
            -y
230.
                      Conditional
                                     V, N, P
  231.1
            - ၁
  231.2
            − <del>0</del>⊃
                      Should, but
  232
            -tε
  233
                      Interrogative present
             -ε
  234
                      Temporal
             -m
  235
                      Past
             -nyi
  236
                      Interrogative past
             -we
240.
        Operators
   241.1
                                       V, N
                      Plural actor
             £7Q
   241.2
             i7u
   242
                      Intensive
   24.3
                              Transformative
              Word order
250.
         Transformatives
   251.1
             -co ?o
                       A place
   251.2
             -co
   251. 3
             -po
   251.4
             -i
   251.5
             c-
   252.1
                       A place
             cw-
   252.2
             -5
   25 3
                       Somewhere
             -yo
             Only with N (except 331)
300.
                        Relative classifier
  نا01.
             ci-
310.
  311.
                        This
              -vi
  312.
                        That
              -n
  313.
              -ha
                        The
```

320.
321. -ci Nominative

330.
331. -m Instrumental N, P

340. 341. Ø Plural

There are two kinds of syntax morphemes: roots (R) 13.1.2 and bases (B). Roots obligatorily occur with formative affixes and bases optionally occur with formatives. The distinction between roots and b ases in Havasupai is based on the following occurences. (It should be understood that when certain phoneme sequences are said not to occur unless with certain suspect formatives, these are sequences which always occur with the same gloss. That is, they refer to certain suspect roots, not just to random phoneme sequences which coincidentally have the same phoneme sequence.) The sequences /na/ and /yul/, for example, never occur with any other morphemes in connected speech without also occuring with 61 or /ki/ and 62 or /vi/, respectively. That is, they appear bound to these affixes. When these sequences occur, they may do so without occuring with any other morpheme but 61 and 62. The reverse is not the case. They never occur alone with any other affixes, or phoneme sequences. Whenever /na/ occurs 61 or /ki/ also occurs; when /yul/ occurs, so does 62 or /vi/. Now since /na/, /yul/ never occur without /ki/ and /vi/, it is possible that 61 and 62 are not prefixes 61 and 62, but merely initial CV sequences of, for example, the syntax morphemes $kin\acute{a}$ to point, viyúl to mix. That this is not the case can easily

320. 321. -ci Nominative

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be shown in the following examples. The prefix 71.2 is highly productive with bases: 1. qám-ka (B-211) he hit it G,
B, pg. 23. 2. ci-qám-k-wi (71.2-B-211-221) He hit them
one at a time G, B, pg. 23. 3. néh-k-wi (B-211-221) he
kills it G, B, pg. 16. 4. ci-néh-wi (71.2-B-221) he
kills them one at a time G, B, pg. 60.

In these examples 71.2 occurs before the total bases, qum and noh. When 71.2 occurs with the sequences kina and wiyui, it occurs after the first CV sequences /ki/ and /vi/ and before what I call the roots -na- and -yul- in the se-5. ki-ci-ná-k-wi (6 1-71.2-R-211-221) he points quences: to them one by one G, B, pg. 2. 6. vi-ci-yúl (62-71.2he mixes them one by one G, B, pg. 14. If kiná and viyúl- were treated as bases, 71.2 would clearly be an infix, the only one occuring in Havasupai and possibly in the Yuman family of languages. However, there are many other roots and bases displaying the same behavior toward these initial CV sequences /ki/ and /vi/ and 71.2 that -ne- and -yul- do. Also, 71.2 (and 71.1) always occur before the total base, see 2 and 4 above. Following this pattern, 71.2 also occurs before the total root, see 5 and 6 above. The sequences /ki/ and /vi/ occur as status-quo prefixes before the total base: 7. yám (B) to go C, vi-yám (62-B) to run C. S. wám (B) to take away, ku-wam (61-B) to drive, C, C. (For other examples of all status-quo and formative affixes illustrated here, see sec. 14.1.1.)

Another example of a suffix formative occuring with a suspect root is: the sequence kikáv to buy would remain unanalyzed if 71.2 and 91 did not occur in the sequence 9. ki-ci-ká-cu-v-k-wi (61-71.2-R-91-101-211-221) he buys many things one by one G, B, pg. 11. Here the sequence /ká/ did not occur in the corpus without also occuring with the sequence 61-101, justified as formatives here by the occurences of 71.2 and 91 between them and the total root -ká-. 61 has already been discussed. 101 occurs as a status-quo affix in 10. tú-ka (B-211) to burn C, C, tú-v-ke to dry (B-101-211) C, C. 101 behaves here with respect to 91 and the root in 9 and the base in 10, as does 61 and 62 in 2 and 4 with respect to 71.2 and the roots -na, -yul-, and the bases in 7 and 8.

I have set up other syntax morphemes as roots, but in these cases the evidence is not as convincing. For example, there occurs the sequences /ko/ and /ti/ which never occur without also occuring with the sequence /suv/. /\$uv/ occurs contrastively with these roots: 11. suv-k6:-ci (82-R-141) they fence it SR, p. 8. 12. sev-ti-ci-k (82-R-141-211) they block it, SR, pg. 6. The sequence /tuv/ may occur with -k6: 13. tev-k6-ci-k (83-R-141-211) they fence it, G, A, pg. 6. These are the only occurence of /suv/ and /tuv/ in the corpus. The lexical similarity of /k6/ in 11 and 13 and the contrast and lexical similarity of /k6/ and /ti/ in 11 and 12 occuring with only one initial CVC sequence, /suv/,

see sec. 14.1.1.)

Another example of a suffix formative occurring with a suspect root is: the sequence kikáv to buy would remain unanalyzed if 71.2 and 91 did not occur in the sequence 9. kí-ci-ká-cu-v-k-wi (61-71.2-R-91-101-211-221) he buys many things one by one G, B, pg. 11. Here the sequence /ká/did not accur in the corpus without also occurring with the sequence 61-101, justified as formatives here by the occurences of 71.2 and 91 between them and the total root -ká-. 61 has already been discussed. 101 occurs as a status-quo affix in 10. tú-kə (B-211) to burn C, C, tú-v-ke to dry (B-101-211) C, C. 101 behaves here with respect to 91 and the root in 9 and the base in 10, as does 61 and 62 in 2 and 4 with respect to 71.2 and the roots -na, -yul-, and the blases in 7 and 8.

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is so striking that /suv/ and /tuv/ have been cut as prefixes 82 and 83, respectively, and -k5:-, -ti have been set up as roots. (Length on -k5- here is expressive.)

On the other hand, the sequence /po/ does not occur but with /so/ as 14. sa-pó-k to know C, C. In this case there are no lexical contrasts for the sequence /po/ or for /so/ as there were for the roots and prefixes in 11 - 13 or any of the formal evidence available for cutting the roots and affixes in 1 to 10. However, /so/ occurs as a status-quo in 15. v5-k (B-211) to walk C, C. sa-v5-k (81-B-211) to wait C, C. 16. y5.-k (B-211) to get or to find, C, C. so-y-o.k to pull C, C. Functioning as a status-quo and formative is the only similarity in behavior toward suspect roots that 81 has in common with 101, 60, 82, 83. I do not consider this as significant as the lexical and formal evidence presented above for cutting other formative prefixes and roots. That is, if these other formatives had only occured as status-quos with bases, I would not have cut the formatives or the roots. Looking ahead a bit, for the same reasons the sequences /ti/ and /ti/ in examples 31, 32, and 61b, 61c respectively, are not cut as 102 and 84.

Now, the sequence 17. ci-ckwá-ci-ci-m they put them in there one by one, (HSL, E, p. 2) is cut as 51-71.2-R-91-141-234. 51 occurs as a status-quo in ci-yám-k (51-B-211) he sends it G, B, p. 3. (That 51 here is not 71.2 will be illustrated in 14.2 where 51 and 71.2 co-occur with a base.

See example 94a there). In 17 there is no obvious lexical contrast or formal evidence. The problem here is which /c/ is 51, the 1st or the 2nd. When səp5-k occurs with 70 it occurs with 71.1 before the total base as te-sp5-k (71.1-R-211) he knows them G, A, pg.3. And when 61, 62 occurs with 71.2 these sequences are 61-62-71.2-R. That is when 71.2 occurred with known roots and bases and formatives where the suspect formative phoneme sequences were not of the same phoneme shape, /ci/, it occurred between the formative and root. With reference to this pattern, the second /c/ in 17 was cut as 71.2. Without knowledge of the occurences of 61 and 62, with respect to 71.2 with roots, or of 71.2 with respect to bases, there would be no justification for cutting 51 in 17. But since the formatives 61 and 62 have been established and have certain distinctive distributions with respect to the roots and bases with which they co-occurred above, 17 was cut with this pattern in mind.

The patterns of those syntax morphemes called roots can be described as follows. If 71.2 or 91 did not occur between the root and the formative affixes, there would be little justification in cutting 61, 62, 101, 51 as formatives, although these were shown to be status-quo affixes in other occurrences. Without the lexical contrast of 82, 83 with -k5- in 11 and 13 or the lexical similarity of -k5- in 11 and 13 or the contrast of -k5- and -ti- in 11 and 12 there would be little justification in cutting 82, 83. That 91 or 71.2 do not follow this pattern

is so striking that /suv/ and /tuv/ have been cut as prefixes 82 and 83, respectively, and -k5:-, -ti have been set up as roots. (Length on -k5- here is expressive.)

On the other hand, the sequence /po/ does not occur but with /so/ as 14. sa-p5-k to know C, C. In this case there are no lexical contrasts for the sequence /pp/ or for /sp/ as there were for the roots and prefixes in 11 - 13 or any of the formal evidence available for cutting the roots and affixes in 1 to 10. However, /sp/ occurs as a status-quo in 15. v5-k (B-211) to walk C, C. sa-vo-k (81-B-211) to wait C, C. 16. y5.-k (B-211) to get or to find, C, C. so-y-o.k to pull C, C. Functioning as a status-quo and formative is the only similarity in behavior toward suspect roots that 81 has in common with 101, 60, 82, 83. I do not consider this as significant as the lexical and formal evidence presented above for cutting other formative prefixes and roots. That is, if these other formatives had only occured as status-quos with bases, I would not have cut the formatives or the roots. Looking ahead a bit, for the same reasons the sequences /ti/ and /ti/ in examples 31, 32, and 61b, 61c respectively, are not cut as 102 and 84.

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with respect to səpó-k and that səpó-k with the same suspect root does not contrast with another root as in example 11 and 13 or can be considered the same root like 11 and 12, provides no basis whatsoever for cutting /so/ here as 81.

Of course, the status of 82, 83 is tenuous. Carried to an extreme, any phoneme or phoneme sequence may be cut for the same reasons since what really constitutes a lexical pair sharing a common root can't be determined. However, there are two reasons for cutting 82,83 here: roots have unequivocally been formally established in Havasupai by 5, 6 and 9. Also the lexical similarity is so easily apparent and high that it would be omitting an important feature of word construction in Havasupai not to cut these roots and others noted in 14. Therefore, in a language where roots and formatives formally were not proven to occur there would be little justification in cutting 82, 83 even though there was a high degree of lexical similarity. But that roots have been formally established and that there is this high degree of lexical similarity, the roots and the formative prefixes have been cut in 11-13.

13.1.3 Compounds in Havasupai may be 2 or 3 membered. All together by affixation which includes the three techniques for word building—the occurrences of formatives, transformatives and status-quo affixes, in any combination or alone, occurring with single roots or bases and then by combining the same techniques in compounds,

produces a total of 7 ways in which words are constructed in Havasupai.

14. There are three form classes in Havasupai: V, N, P.

The construction of V in Havasupai proceeds from the minimal V which is an unaffixed root or base to the full inflected V which is 1) any root which has occurred with its formative plus or minus any one or combination of affix types described above and 2) any base which optionally co-occurs with status-quo affixes plus or minus any one or combination of other affix types. For roots and bases the constituents of the full inflected V are dependent on class and subclass and optionally occur in any one or combination of the following word phases to become a full V: root words base words, transitive intransitive words transitived-intransitivized words, goal transitive words, attribute words. These particular word phases and the affixes which mark them are significant because they are the major subclasses in V and also the different inter and intra word phases have different syntactic occurrences.

In the following schematic diagram of the morphology of the V, the affixes or affix combinations responsible for these words are given together with the possibilities for types of words a particular root or base may have. In the diagram, sub-classification has precedence over the actual orders in which the affixes occur. For these orders see the affix inventory. F stands for formative affixes; SQ for status-

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quo and TR for transformatives. + means a particular root or base occurs with a particular divisive affix or affixes; + means that the divisive affixes occur with some members of a class but not with others.)(means that a particular class of root or base is incompatible with a divisive affix or divisive affix sequence.

Since some affixes have a dual function as formative and statusquo morphemes, the tern status-quo used below and hereafter includes
all such affixes and those which only function as status-quo. The
term formative hereafter includes only those affixes which function
as formatives.

There has been no sub-classifiction of V as to what formatives or status-quo affixes have occurred with a particular root or base.

I am assuming that although in the corpus all the possible combinations of status-quo and formative affixes did not occur, it is highly probable that these combinations will occur in some future corpus.

14.1 A word which when occurring as a single isolated free utterance may occur in slot A: ++30 xl++(141)++180+211+(221) and in (71.3) (222)

slot A may be preceded by a word which may occur alone in slot B:

x2(141)++311+321 where xl and x2 may co-occur as#xl + x2#and

+(241)
713)

where there is a dependency between x2 and (30 + 180) in x1 and a de-

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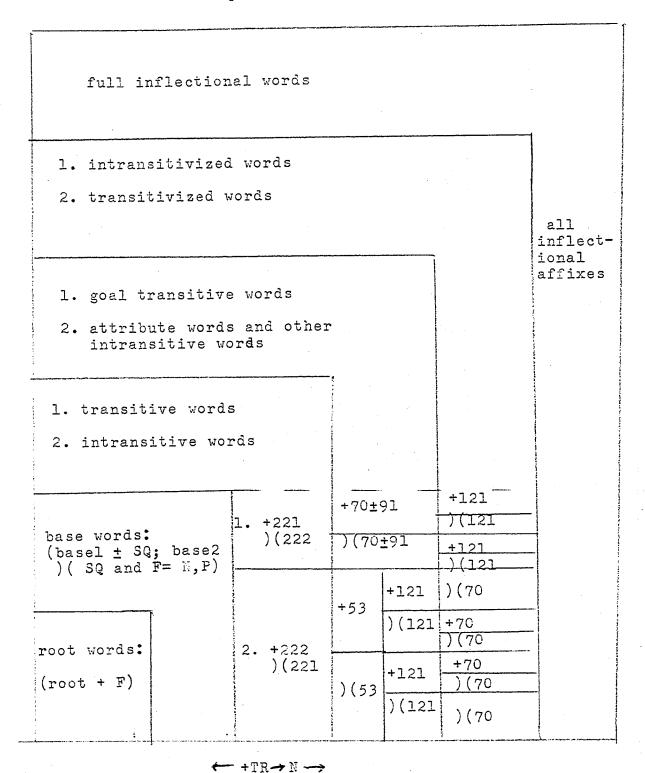
There has been no sub-classifiction of V as to what formatives or status-quo affixes have occurred with a particular root or base.

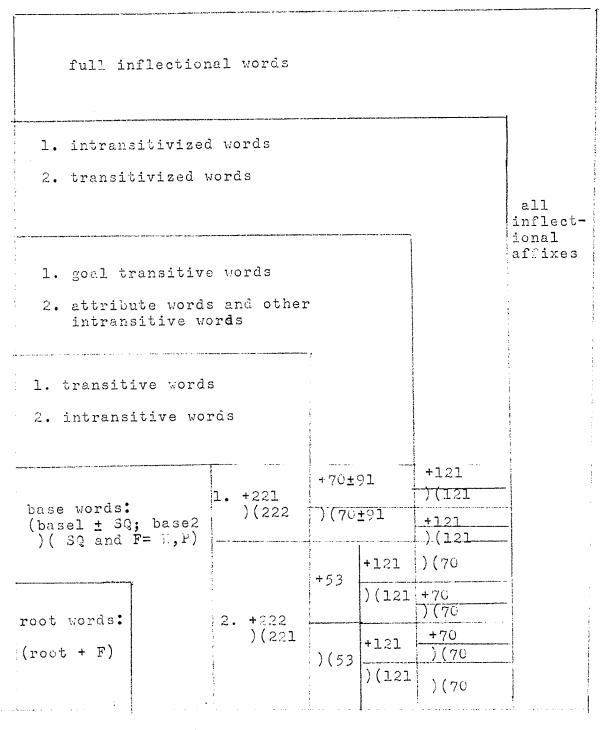
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14.1 A word which when occurring as a single isolated free utterance may occur in slot A: ++30 xl++(141) ++180 + 211+(221) and in (71.3) (222)

slot A may be preceded by a word which may occur alone in slot B: $\frac{x^2}{2}$ (141)++311+321 where xl and x^2 may co-occur as #xl + x^2 # and x^2 (713)

where there is a dependency between x2 and (30 + 180) in x1 and a de-





pendency between (141, 241, 71.3) in xl and (141, 241, 71.3) in x2 and where xl is incompatible with slot B even when x2 does not precede it and x2 is incompatible with slot A even when xl does not follow it, xl is a V and x2 is an N. (141, 241, 71.3 are plural actor allomorphs.) For additional required diagnostic criteria for N, see section 13.

Slot A is diagnostic for V. N here is optional for diagnostic purposes for V and vice-versa. The ++ means that the affixes are obligatory for the definition of a form class. ++ does not mean that there is a dependency between the affixes themselves or that they obligatorily occur with N or V here. + means that 211 occurs with all V but not diagnostically or divisively. It also occurs with N. + means that 221 and 222 in slot A and also those affixes occuring with this sign in slot B are only divisive for a sub-class of V. Any one of the three possible pairs with ++ or the total sequence 30 + 140 + 180 is diagnostic in A. Some bases may occur in the sequence ± 30 ± 211 ± 221 ± 222

or without 30 as $\pm 180 \pm 211$ (221) but no bases but V and N may occur \pm (222)

in the morpho-syntactic slot A+B or with any of the other possible combinations of 30,180 or the plural actor allomorphs 141, 241, 71.3 in Slot A.

The dependency between N and the person prefixes 30 and person suffixes 180 in the V occurs with the N subclass N1211 person pronoun and N1212 possessive pronoun. Only N1212 will be exemplified here. First and second person may be marked three times in a single

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Slot A is diagnostic for V. N here is optional for diagnostic purposes for V and vice-versa. The ++ means that the affixes are obligatory for the definition of a form class. ++ does not mean that there is a dependency between the affixes themselves or that they obligatorily occur with N or V here. + means that 211 occurs with all V but not diagnostically or divisively. It also occurs with N. + means that 221 and 222 in slot A and also those affixes occuring with this sign in slot B are only divisive for a sub-class of V. Any one of the three possible pairs with ++ or the total sequence 30 + 140 + 180 is diagnostic in A. Some bases may occur in the sequence + 30 ____ +211(221) cr without 30 as +180 +211(221) but no bases but V and N may occur

in the morpho-syntactic slot A+B or with any of the other possible combinations of 30,180 or the plural actor allomorphs 141, 241, 71.3 in 51.07 A.

The dependency between N and the person prefixes 30 and person suffixes 180 in the V occurs with the N subclass N1211, person pronoun and N1212, possessive pronoun. Only N1212 will be exemplified here. First and second person may be marked three times in a single

utterance: once as a free form personal or possessive pronoun and twice in the V as prefix and suffix. All of these combinations are optional, and none or all may co-occur. Third person is only marked in the pronoun. There is no specific affix for third person as there is for first and second person. In the third person, the third person pronoun will occur, but no prefix or suffix without the same phonemic shape as 211,-k, and 211 also occurs in the V in the first and second person. So I am assigning that /k/ which occurs in all three persons to 211 and so third person would be only marked in the free form personal pronoun.

Number may be marked twice in a single utterance. Once in the V and once in the N or in sub-classes of V, Vill, 12, when those sub-classes occur with other V sub-classes.

The following are examples from texts of the diagnostic slot for V.

An s subscript to V means a V base and an r subscript means a V

root. 18. təmɛ-k (Vs -211) he is ambitious CA, N,pg. 11.

19. təm-d·y-ŋ (Vs-241.1-182) You all are ambitious 5C, O,pg. 9.

20. wi-cə (Vs-141) they do it B, N,pg. 1. 21. mə-wi-ci (32-Vs-141)

you all do it 9C, N, pg. 7. 22. yu-ci (Vs-141) they think BS, N,

pg. 17. 23. m-yu-ci (32-Vs-141) you all think J, N,pg. 8.

24. tə-ɔ-v (84-Vs-121) its not BS, N, pg. 24. 25. a-ɔ:-v-c

(31-Vs-121-141) we are hopeless BS, N, pg. 28. 26. ti-ci-k

(Vs-141-211) they turned into B, N, pg. 8. 27. ti-ci-q-yu-m

(Vs-141-182-222-234) you all turned into it B, N, pg. 11.

Nowhere in texts did an example of agreement in person occur within the V or between N1211 and a V. Only in indirect eliciting of citation sentences which were not elicited for these agreements and in direct eliciting for these agreements did they occur. However, agreement in number between N and V occurred in texts.

The following are examples of person agreement from indirect eliciting. 28 and 31 agree in person pronoun in the N4-prefix and suffix person in the V. 28, 29, 30 and 31-33 show three ways in which the first and second person is marked in Havasupai — twice in the V and once in the free personal pronoun. 28. inyá + ?-sp5-?-yu (N+31-Vs-181-222) I know Cll, B, p. 3. 29. inyá-c +sə-v5-?-yu (N-321+81-Vs-181-222) I wait C8, C, p. 23. 30. ?-sp5-?-yu (31-Vs-181-222) I know Cll B, p. 3. 31. mâ-c +mə-yá-ŋ-yu (N-321+32-Vs-182-222) It syou Cll, H, p. 58. 32. m-yávi-ŋ-yu (32-Vs-182-222) try it. C9, A23, p. 31. 33. mə-má-ŋ (32-Vs-182) you eat it Cll, p. 51. 4. mə-wi-ŋ (32-Vs-182) you do it Cll, p. 21.

Examples of agreement in number between Nl211, other N subclasses, and V (Vsl1, 12) occurred in texts, (141 here in the N is not 321 because 141 precedes and 321 follows decade 310. See N section 17.) 35. hom-áy + kyá-ci-m (N-241.1 + Vs-141-234) The sons shot them B, N, p. 9-10. 36. pá·ciý + wasí:v-ci-m (N-141-311 + Vs-141-234) The man think that way BS, N, p. 6. 37. inyá-cu-v + yú:-ci-nya

He"they cut

He~they ran away

(N-141-11+ Vs-141-235) We were BS, N, pg. 7.38. q-á-ci-m +yú-ci ($Vs_{11}^{-241.1-234} + Vs-141$) They are small BS, N, pg. $\Im 1$.

?-sú·l-ci-?-wi

The following are examples from direct eliciting of the three way agreement in person and two-way agreement in number.

C, C I we tear it down 3 9. inyá-cu-c N-141-321 31-Vs-141-181-221 -cikyət-I~we cut Vr -luk--yu I we ran away 222 Vя -cipá-I~we got out ۷r 40. má-cu-c-ma-n C, C You you all tear it mə-Vs-ci-ŋ-wi N-141-321~N-182 You~you all cut -Vr--'Vg-You~you all ran away -Vr-You~you all got out nyiθá-cu-c C, C He"they tear it down 41. Vs-ci-k-wi N-141-321

He"they got out -Vr-Note that as the pronoun changes so does the appropriate prefixes 31, 32 and suffixes 181, 182. Similarly, number simultaneously occurs

-Vr-

Vs-

All V may occur in slot A. However, only certain V occur there with 221 and only other V may occur there with 222. No V

in the pronoun and the V.

occurring in slot A with 221 may occur with 222 and vice-versa except in environments to be described below. This restriction of occurrence results in the first major sub-classification of V in Havasupai: V with 221 are transitive V(Vt) and V with 222 are intransitive V(Vi). For examples see 39-41 above.

Vt and Vi may each be further sub-divided into those words whose syntactic morphemes are roots (Vtr, Vir) and those words whose syntactic morphemes are bases (Vts, Vis).

Any V may be formed in any one of three ways and accordingly there are three types of V. (In the following, all examples with the same number have a common root or base. The different letters indicate a different status-quo or formative has occurred with the same root or base.)

The first type is the occurrence of single formatives one at a time with a common root. Examples for Vtr are 11, 12, 13. Others are 44a, ti-t-kyó; i-k (71.1-84-Vtr-all) they cut (wood) SR, A, pg. 5. 44b. cî-c-kyó; i-k (51-71.2-Vtr-211) they cut (meat) DWT2, A, pg. 5. 45a. s-púl- (81-Vtr) it soaks HSPD, H, pg. 1. 45b. tə-púl-ci-m (84-Vtr-141-234) They wet 13J, B, pg. 5. 46a. tə-pé-ci-k (84-Vtr-141-211) They believe it C, C 46b. pé-v-ci-k (Vtr-101-141-211) they obey C, C 47a. ci-mi-kə (51-Vtr-211) to lay it down C, C 47b. kə-mi-kə (61-Vtr-21i) they get it in there C, C 48a. ci-múti-kə (51-Vtr-211) to bury it C, C

48b. ka-mát i-ka (61-Vtr-211) to leave **footprints** in the sand and then someone comes and buries them, C, C 49a. ci-kwá:-ca (51-Vtr-141) they put or pile it in LS, N, p. 9.

49b. sə-kwá:-ci-k (81-Vtr-141-211) they put it in 8C, N, p. 1.

A variation of type 1 in Vtr is one root occurring with one formative. Examples are: 50. ku-vnów-k (61-Vtr-211) He lifts it 5J, H, p. 12. 51. yí-ci-nyó·v-ci-k (51-71.2-Vtr-141-211) They hoe them DWT2, C, p. 11. 52. ví-ci-nóm-k (62-71.2-Vtr-211) She sews them C, G.

The second type of V formation always occurred with at least two formative affixes. For Vtr, example 9 occurred with two formatives as ki-ci-ká-cu-v (61-71.2-Vtr-91-101) They buy them C, G. Another example of type 2 is 53. ku-vá-v (61-Vtr-101) He borrows it Cll, A, p. 40. kuváv occurs with 91 and 71.2 as ki-ci-vá-cu-v (61-71.2-Vtr-91-101) He borrows them C, G.

The third type of V formation forms different words from a common root by a combination of the methods of type one and two.

This type can be further exemplified for Vtr by the root -na- which was represented in example 5. The following series shows the way in which -na- combines these methods: 54a. ki-na (61-Vtr) He points it out B, H, p. 4. 54b. ki-na-vi-m (61-Vtr-101-234) He tells it (PW, H, p.) 54c. ci-k-na-co (51-61-Vtr-141) They plan it (BS, H, p. 19) 54d. ci-k-na-m (51-61-Vtr-112) He accuses him

CII, p. 14.

In example 5, it was shown that 71.2 occurs between 61 and the root -na- in example 54a. 71.2 also occurs between root and formative in 54b. I have no examples for 71.2 in that position in 54c and 54d, but the lexical similarity is very high and the phonemic shape of the root is the same in these four examples. Therefore, I identify the root -na- as that occurring in all four examples, 54a - 54d.

The only examples of Vir are other variations of type 1. That is, one root with one formative is a Vi and with the other formative is a Vt: 55a. tə-5:ţi-kə (84-Vtr-211) To put it on the edge C, C.

55b. kə-5:ţi-kə (61-Vir-211) to walk along the edge. (a sequence that occurs in texts indicates that the root here may be -ɔ- and not -ɔţi- and that -ţi- here may be 102: kə-5:n-kə (n here may be 103)

(61-Vir-211) I'll be sitting on top of the world CA, N, p. 3.

56a. ci-pá-ci-k-yu (51-Vir-141-211-222) They go out B, F, p. 6.

56b. kî-c-pá-ci-ci (61-71.2-Vtr-91-141) They fired them. 57a-c may have the same root or have separate bases. I am treating it here as a separate woot from that in 59 and the same root here.

57a. s-kwi-ci-k-yu (81-Vir-141-211-222) They stand C, C.

57b. tə-kwi-kə (84-Vtr-211) To line things up C, C.

An example of a variation of the first type in Vir which also occurred in Vtr is one in which there is no change of affix in a common root: ki-ci-nil-kə (61-71.2-Vir-211) They jumped them C, C.

There are two ways of constructing Vts: by the first and third methods. That is, by combining at least two status-quo affixes at a time to a common base and adding single status-quo affixes one at a time to this same base or just adding single affixes one at a time to the same base. In addition there is one example of a Vts going to a Vis, 7la.

Examples of type three are the following series: 59a-e, 60a-c, 6la-d, 62a-c. 59a. kwi-kə (Vts-2ll) She weaves C, C. 59b. kwi-n-kə (Vts-103-211) To go around something like a worm going around a stick C, C. 59c. s-kwi-n-ka (81-Vts-103-211) to twist an ear C, C. 59d. s-kwi-ti-ka (81-Vts-102-211) to turn or twist around C, C. 59e. θa-kwi-ka (85-Vts-211) to wring out C, C. (These are the only occurrences for 103 and 105 in the corpus.) 60a. pú-kə (Vts-211) to put something in a sack C, C. 60b. pú-ţim-cu-k (Vts-102-112-141-211) they cover it or they wear something like a hat 7C-I, p. 2. 60c. tə-pú-; i-kə (84-Vts-102-211) to cover something for protection C, C. 6la. y5-k (Vts-211) he gets it C, C. 6lb. sc-y5-k (81-Vts-2ll) he pulls it PW, F, p. 4. 61c. y5-v (Vts-101) he makes or builds it C, C. 61d. ti-y5-v-ci-k (84-Vts-101-141-211) they sharpen it 7C, F, p. 1. 62a. tinyú-cə (Vts-141) they copy it BS, N, p. 17. 62b. fi-tinyút i-ka (71.1-Vts-102-211) they write it HSL, B, Bp. 5. 62c. tinyú:-və (Vts-101) he follows it B, G, p. 30. 63 a. si-ci-k (Vts-141-211) SR, N, p. 5. they name it 63b. si-vi-k (Vts-101-211) they count it C, C.

Examples of the addition of single status-quo affixes one at a time to a common base with Vts are: 64a. nál-kə (Vts-lll) to be born or to drop something C, C. 64b. mál-ka-k-wi (Vts-111-211-236) did he swallow it? C, C. 65a. hán-kə (Vis-211) it's good C, C. 65b. yə-han (52-Vts) I'll help C, pg. 22. 65c. yi-cə-hani-kə (52-71.2-Vts-211) They look after it HSL, pg. 51. 66a. wi-ka (Vts-211) he does it C, C. 66b. wi-t, i-ci (Vts-102-141) they finished it B, I, pg. 20. (That 102 is not 171 here is shown in the following example where 102 and 151 co-occur: 66c. cu-wi-ţi-ti-k (71.2-Vts-102-151-211) they finish them 5C, C, pg. J.) 67a. qam-kə (Vts-211) He hit it with a fist C, C. 67b. ci-qam-k-wi (51-Vts-211-221) He hit it with a stick C, pg.]. 67c. sa-qám-k-wi (81-Vts -211-221) He hit it with a stone C, I, pg. 8. 67d. tə-qám-kə (84 -Vts-211) to bump something C, C. 68a. tú-kə (Vts-211) to burn C, C. 68b. tú-v (Vts-101) He dries it 8C, G, pg. 1. 69a. cá-kə (Vts-211) he pours it in C, C. 69b. tε-s-cά-ci-k (71.1-81-Vts-141-211) they put stakes in the ground 5C, C, pg. 4. 69c. we-cá-m-ci-m (11-Vts-112-141-234) they dump it out DWT2, S, pg. 7. 70a. swd-ka (Vts-211) he tears it or to open a can SR, pg. 5. 70b. ka-swd-ka (61-Vts-211) he rips it open C, C.

An example of a Vts going to a Vis is: 7la. təɔɔl-kə (Vts-2ll) she cooks C, C. 7lb. təɔl-vi-k (Vis-10l-2ll) to take a sweat-bath

C. Now it may be that in 71b, 121 (intransitivizer) is occurring and not 101, or it is possible 101 has a dual function as intransitivizer and formative. However, it is not the case that whenever -v (121) occurs the word is intransitivized e.g. 72b, 68b, 62c, 61c. Also whenever 121 occurred the gloss of the word with which it occurred never changed, it was just intransitivized. Therefore, in 71b, since the gloss changed the occurrence of -v there was cut as 101. Such is the case with some bases in Vis below. For example, the affixing of 110 to some bases (see 77 ff.) might appear to have only a locative gloss, but since with the addition of 110 the gloss of the whole base changes, 110 was classed as status-quo. When 110 occurs with nouns, the base didn't change its gloss. There is just a locative feature added to the base. For example, we house, we-m (N-112) in the direction of the house.

There are three types of Vis: a variation of type I where a base of one member of a series is a locative. Type II is a Vis going to a Vts with the addition of $\pm 61 + 112$. The third type is a variation of the second type where the unaffixed base is also a locative. Type I examples are: 72a. tf-ci-k (Vis-141-211) they turn into something B, N, pg. 8. 72b. tf-vi-m (Vis-101-234) she is pregnant LS, B, pg. 2. 73a. hwáti-kə (Vis-102-211) she bleeds C, A, pg. 1. 73b. hwát-ti-ka (Vis-102-211) she menstruates C, A, pg. 1. 74a. ú-vi-m (Vis-101-234) it is clear B, B, pg. 5. 74b. ú-kə (Vis-211) he sees it B, N, pg. 6. 75a. v5-k (Vis-211)

There are two ways of constructing Vts: by the first and third methods. That is, by combining at least two status-quo affixes at a time to a common base and adding single status-quo affixes one at a time to this same base or just adding single affixes one at a time to the same base. In addition there is one example of a Vts going to a Vis, 71a.

Examples of type three are the following series: 59a-e, 60a-c, 6la-d, 62a-c. 59a. kwi-kə (Vts-2ll) She weaves C, C. 59b. kwi-n-kə (Vts-103-211) To go around something like a worm going around a stick C, C. 59c. s-kwi-n-ka (81-Vts-103-211) to twist an ear C, C. 59d. s-kwi-ti-kə (81-Vts-102-211) to turn or twist around C, C. 59e. 09-kwi-ka (85-Vts-211) to wring out C, C. (These are the only occurrences for 103 and 105 in the corpus.) 60a. pú-kə (Vts-211) to put something in a sack C, C. 60b. pú-ţim-cu-k (Vts-102-112-141-211) they cover it or they wear something like a hat 7C-I, p. 2. 60c. tə-pú-ţi-kə (84-Vts-102-211) to cover something for protection C, C. 6la. y5-k (Vts-211) he gets it C, C. 6lb. sc-y5-k (81-Vts-2ll) he pulls it PW, F, p. 4. 61c. y5-v (Vts-101) he makes or builds it C, C. 61d. ti-y5-v-ci-k (84-Vts-101-141-211) they sharpen it 7C, F, p. 1. 62a. tinyú-cə (Vts-141) they copy it BS, N, p. 17. 62b. ft-tinyút i-kə (71.1-Vts-102-211) they write it HSL, B, Bp. 5. 62c. tinyú:-və (Vts-101) he follows it B, G, p. 30. 63 a. si.-ci-k (Vts-141-211) SR, N, p. 5.

they name it 63b. si-vi-k (Vts-101-211) they count it C, C.

Examples of the addition of single status-quo affixes one at a time to a common base with Vts are: 64a. nol-ka (Vts-III) to be born or to drop something C, C. 64b. núl-ka-k-wi (Vts-111-211-236) did he swallow it? C, C. 65a. hán-kə (Vis-211) it's good C, C. 65b. yə-hán (52-Vts) I'll help C, pg. 22. 65c. yí-cə-háni-kə (52-71.2-Vts-211) They look after it HSL, pg. 51. 66a. wi-ka (Vts-211) he does it C, C. 66b. wi-ti-ci (Vts-102-141) they finished it B, I, pg. 20. (That 102 is not 171 here is shown in the following example where 102 and 151 co-occur: 66c. cu-wi-ti-ti-k (71.2-Vts-102-151-211) they finish them 5C, C, pg. J.) 67a. qám-kə (Vts-211) He hit it with a fist C, C. 67b. ci-q\u00e1m-k-wi (51-Vts-211-221) He hit it with a stick C, pg.]. 67c. sa-q6m-k-wi (81-Vts -211-221) He hit it with a stone C, I, pg. 8. 67d. tə-qám-kə (84 - Vts-211) to bump something C, C. 68a. tú-kə (Vts-211) to burn C, C. 68b. tú-v (Vts-101) He dries it 8C, G, pg. 1. 69a. cá-kə (Vts-211) he pours it in C, C. 69b. tε-s-cά-ci-k (71.1-81-Vts-141-211) they put stakes in the ground 5C, C, pg. 4. 69c. we-cá-m-ci-m (11-Vts-112-141-234) they dump it out DWT2, S, pg. 7. 70a. swá-kə (Vts-211) he tears it or to open a can SR, pg. 5. 70b. ka-swd-ka (61-Vts-211) he rips it open C, C.

An example of a Vts going to a Vis is: 7la. təɔɔl-kə (Vts-211)
she cooks C, C. 7lb. təɔl-vi-k (Vis-101-211) to take a sweat-bath

C, C. Now it may be that in 71b, 121 (intransitivizer) is occurring and not 101, or it is possible 101 has a dual function as intransitivizer and formative. However, it is not the case that whenever -v (121) occurs the word is intransitivized e.g. 72b, 68b, 62c, 61c. Also whenever 121 occurred the gloss of the word with which it occurred never changed, it was just intransitivized. Therefore, in 71b, since the gloss changed the occurrence of -v there was cut as 101. Such is the case with some bases in Vis below. For example, the affixing of 110 to some bases (see 77 ff.) might appear to have only a locative gloss, but since with the addition of 110 the gloss of the whole base changes, 110 was classed as status-quo. When 110 occurs with nouns, the base didn't change its gloss. There is just a locative feature added to the base. For example, we house, we-m (N-112) in the direction of the house.

There are three types of Vis: a variation of type I where a base of one member of a series is a locative. Type II is a Vis going to a Vts with the addition of $\pm 61 + 112$. The third type is a variation of the second type where the unaffixed base is also a locative. Type I examples are: 72a. ti-ci-k (Vis-141-211) they turn into something B, N, pg. 8. 72b. ti-vi-m (Vis-101-234) she is pregnant LS, B, pg. 2. 73a. hwáti-kə (Vis-102-211) she bleeds C, A, pg. 1. 73b. hwát-ti-ka (Vis-102-211) she menstruates C, A, pg. 1. 74a. ú-vi-m (Vis-101-234) it is clear B, B, pg. 5. 74b. ú-kə (Vis-211) he sees it B, N, pg. 6. 75a. vó-k (Vis-211)

he walks C, C. 75b. v5-ki-k (Vis-111-211) he returns 8C, pg. 1.

75c. so-v5-k-yu (81-Vis-211-222) I wait C, C. 75d. v5-m-ki-nyo (Vis-112-211-235) He went home C, pg. 4. 76a. vá (Loc) here

C, C. 76b. vá-m (Vis-112) I get here LS, A, pg. 20.

76c. vá-ko (Vis-111) I arrive LSA, pg. 13. (See also example 64b for another occurrence of 111.) 77a. sp5:-ci-ko (Vis-141-211) they know it BS, B, pg. 15-16. 77b. sp5:-m-ci-ki-nyo (Vis-112-141-211-235) they remembered C, B4. 78a. é:v (Vis) he hears it J, N, pg. 5. 78b. ya?-é:vi-ci-k (52-Vis-141-211) they understand BS, F, pg. 33.

The second type of Vis may be illustrated by: 79a. wá-kə (Vis-211) he sits C, C. 79b. wá:-m-ci-k-wi (Vts-112-141-211-221) they took us there DWT1, S, pg. 12. 79c. ku-wá-m-kə (61-Vts-112-211) he drives us C, C.

The following is the third type of Vis. This example contains the most amount of words formed from a single base in the corpus. The base begins with a locative and forms Vis and Vts: 80a. yákə (Loc) here C, C. 80b. yá·-m (Vis-112) it goes 5C, A, pg. 5.

80c. yá-ţi-kə (Vis-102-211) it flees C, C. 80d. vi-yá-m-ci-m (62-Vis-112-141-234) they run LS, B, pg. 4. 80e. ci-yá-m-ci-m (51-Vts-112-141-234) they send it HSL, B, pg. 5. (That 51 here is not 71.2 is illustrated in the following example where 51 and 71.2 co-occur: 80f. cî-c-yá:-ci-m-ci-k (51-71.2-Vts-91-112-141-211) they send them

he walks C, C. 75b. v5-ki-k (Vis-111-211) he returns 8C, pg. 1.

75c. sə-v5-k-yu (81-Vis-211-222) I wait C, C. 75d. v5-m-ki-nyə
(Vis-112-211-235) He went home C, pg. 4. 76a. vá (Loc) here
C, C. 76b. vá-m (Vis-112) I get here LS, A, pg. 20.

76c. vá-kə (Vis-111) I arrive LSA, pg. 13. (See also example 64b for another occurrence of 111.) 77a. sp5:-ci-kə (Vis-141-211) they know it BS, B, pg. 15-16. 77b. sp5:-m-ci-ki-nyə (Vis-112-141-211-235) they remembered C, B4. 78a. é:v (Vis) he hears it J, N, pg. 5. 78b. ya?-é:vi-ci-k (52-Vis-141-211) they understand BS, F, pg. 33.

The second type of Vis may be illustrated by: 79a. wá-kə (Vis-211) he sits C, C. 79b. wá:-m-ci-k-wi (Vts-112-141-211-221) they took us there DWTl, S, pg. 12. 79c. ku-wá-m-kə (61-Vts-112-211) he drives us C, C.

The following is the third type of Vis. This example contains the most amount of words formed from a single base in the corpus. The base begins with a locative and forms Vis and Vts: 80a. yákə (Loc) here C, C. 80b. yá·-m (Vis-112) it goes 5C, A, pg. 5.

80c. yá-ti-kə (Vis-102-211) it flees C, C. 80d. vi-yá-m-ci-m (62-Vis-112-141-234) they run LS, B, pg. 4. 80e. ci-yá-m-ci-m (51-Vts-112-141-234) they send it HSL, B, pg. 5. (That 51 here is not 71.2 is illustrated in the following example where 51 and 71.2 co-occur: 80f. cî-c-yá:-ci-m-ci-k (51-71.2-Vts-91-112-141-211) they send them

HSL, E, pg. 5.) 80g. ci-jid-v-kə (51-Vts-101-211) he orders it G, B, pg. 5. 80h. vi-yd-ţə-wi (62-Vis-102-211) it blows away C, G, pg. 62.

14.2 Vts and Vtr may each be further sub-divided into two subclasses Vtsl, Vts2, Vtrl, Vtr2. These sub-classes and their subclasses are exemplified in four tables: Vtsl -table 1, Vts 2 -table 2,
Vtrl -table la, Vtr2 -table 2a. These tables illustrate the divisive
sequences upon which these sub-classes are based. Before the
tables are given, general divisive sequences are shown in diagram
2 with the combinatory possibilities of all affixes occurring with
each sub-class in the tables.

The first major Vts and Vtr division depends upon whether or not a particular Vts or Vtr occurs with 91: All Vts and Vtr which occur with 91 are Vts2, Vtr2. All Vts, Vtr incompatible with 91 are Vts1, Vtr1. These two sub-classes are further sub-divided into sub-classes depending upon whether or not a given Vts1, for example, may occur with 1) any of the other distributive goal allomorphs, prefixes 71.1, 71.2 and the operators 71.3, 241.1, singly or in combination; 2) whether or not it may occur with 121;3) and whether or not it may occur with 121;3) and whether or not it may occur with 121;3) and whether or not it may occur with

Except for the formatives and the dependency listed above diagram 2 all sequences in that diagram are optional. All the sequences in diagram 2, and diagram 3 for Vi, may also occur in slot A with all the

affixes there. So the sequences in diagrams 2 and 3 may be read with the affixes occurring in slot A in mind. All the combinations of status-quo and formative affixes that occurred in the corpus are given in these diagrams. I would think that all possible combinations of the status-quo and formative affixes would occur in some future corpus. However, when two formatives occurred with a root or two status-quo affixes with a base and one of them did not occur without the other in my corpus the following dependency notation is used: if both did not occur without the other with a particular root or base, - was used; when the prefix did not occur without the suffix, was used; and when the suffix did not occur without the prefix. was used. A dependency of two prefixes where one did not occur without the other is signalled by a little arrow above them and the direction of the arrow indicating which prefix is dependent upon which or

In the corpus 121 is incompatible with 221 and 135 only occurred with 141, 234, 181. With Vt: 121 222. For economy, in diagram 2 the suffix sequence (+141+211+221) is marked as A. The suffix sequence (+121+141+211+222) will be marked as B. When 121.1 occurs for 121.2 in B the sequence is marked as C. The suffix sequence (+91+121+141+211+222) will be marked as Bl. The sequence (+91+141+211+221) will be marked as Al. All other suffix sequences are written out. Therefore A + 136 means all the optional sequences in A + the suffix 136. A line below a sequence or an affix means that everything above that line occurs in the same space below it. The operators 241,

242, 71.3 are given in any order. All formatives and statusquo affixes are in the second and fourth columns although some precede divisive prefixes and follow divisive suffixes. See diagram 2 on page 253a.

Diagram 2 presented generalized affix sequences from the tables. The tables give the examples upon which diagram 2 was based. The tables are so arranged that the different sequences or single affix occurrences which are divisive for any sub-class occur in any one of the five vertical columns A-F. Each column represents one step of the five step divisive series which sub-classes transitive and intransitive roots and bases. For example, the different occurrences of the divisive affixes in column A, singular person-plural object, can be noted throughout any sub-class or across sub-classes by scanning the column from the largest to the smallest sub-class. Each step alone or in combination with another may be divisive for any one sub-class. Additional examples given for any sub-class which do not go through the five step series are given to show the cooccurrences of 50+60+70 and 70+80 plus any additional suffix formatives, status-quos, or divisive sequences for that sub-class. So even though all the affix sequences shown for other members are not given for these additional examples, the five step divisive sequences for that particular sub-class occurs with these additional examples, and these additional examples should be read with these five steps in mind. The examples from citation where there is a text example were gotten by ancillary eliciting after the text example occurred.

In the tables all sub-classes of a particular larger

-	e •	{B} ± 136	€ B 3		(A)	ζ Β, ς ζ	A A	44	${A \brace B}$	{₽} 	$\binom{A}{B}$		$\left\{ \begin{array}{c} A \\ B \end{array} \right\}$		${A_1 \brace m}$	+135	A.1	()
-	Suffix Fand SQ			102			101 101	101		L 0.2					112		- 101	
-	>			1			1		. •	14 (14) 14 (14) 14 (14)					^		\ }	
Djagram 2	Prefix Fand SQ		ా చ	ស សសស ម មុខ			78	51	51	652 P.2				T8:	51		Ş.	
Dia	Divisive Affixes	±71.1±242±71.3			171.12421241.1	+11+71.1+242		+71.2+242	±71.2±241.1	^ - 1 H → 1 H →	+71.3		+71.1±242+71.3		+11+71.2+242+71.3	+71.2	+71.2+71.3	+71.1+242+71.3
-	Vts sub- classes	11121	1116	111a2	1122	1121b	11218	121	1228	0 V V	13	1,	211.	2121	221a	221b	222+	2122

हरी। १८ क् रास	THE CONTRACTOR OF THE CONTRACT								
Al	AL		A / B /	$\{egin{array}{c} A \\ B \end{array}\}$	{ A 3	{ A }	A (A)	B, (B)	
101				ر	101	101			
5-1 				% 1000 % 1000 %	478	62)51)61	84 84 84 81 81 81 81	61	
2	6-12+676+1-12+1-3	•		±71.1±242±71.3		$ \begin{array}{c} \tau \left\{ 71.2 \\ 71.2 \pm 71.3 \right\} \\ 71.2 \pm 71.3 \end{array} $	+71.2+71.3	<u>+71.2+71.3</u> <u>+71.1+71.3</u>	
+ 000	7 K K T		C,	Vtr sub- classes 111	112	121	123	211	

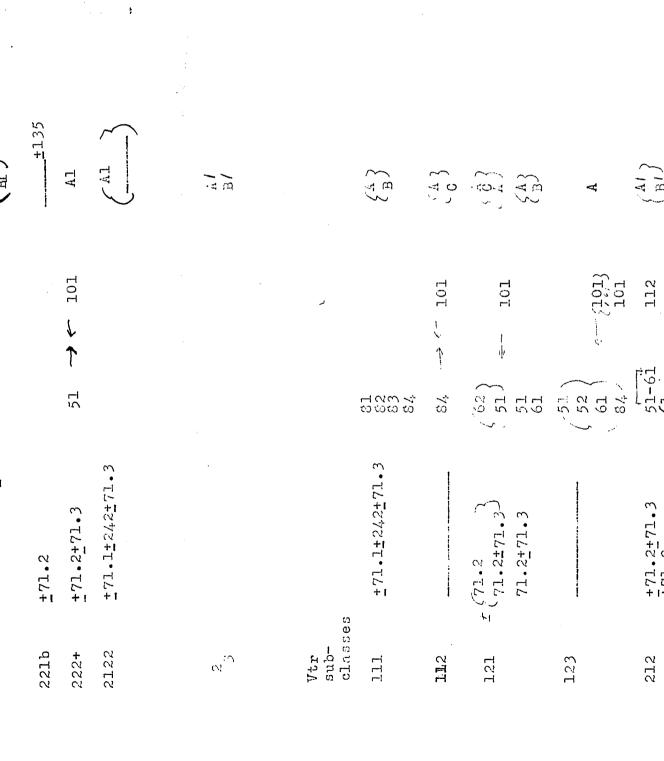
242, 71.3 are given in any order. All formatives and statusquo affixes are in the second and fourth columns although some precede divisive prefixes and follow divisive suffixes. See diagram 2 on page 253a.

Diagram 2 presented generalized affix sequences from the tables. The tables give the examples upon which diagram 2 was based. The tables are so arranged that the different sequences or single affix occurrences which are divisive for any sub-class occur in any one of the five vertical columns A-F. Each column represents one step of the five step divisive series which sub-classes transitive and intransitive roots and bases. For example, the different occurrences of the divisive affixes in column A, singular person-plural object, can be noted throughout any sub-class or across sub-classes by scanning the column from the largest to the smallest sub-class. Each step alone or in combination with another may be divisive for any one sub-class. Additional examples given for any sub-class which do not go through the five step series are given to show the cooccurrences of 50+60+70 and 70+80 plus any additional suffix formatives, status-quos, or divisive sequences for that sub-class. So even though all the affix sequences shown for other members are not given for these additional examples, the five step divisive sequences for that particular sub-class occurs with these additional examples, and these additional examples should be read with these five steps in mind. The examples from citation where there is a text example were gotten by ancillary eliciting after the text example occurred.

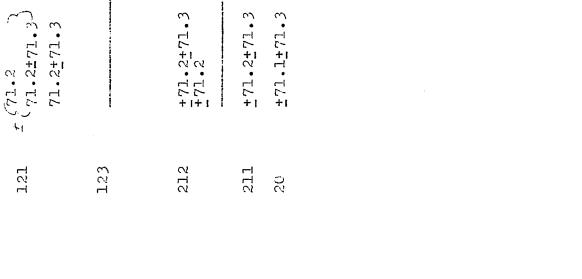
In the tables all sub-classes of a particular larger

-	Divisive Aff. and Aff. Seq.	${A \brace B} \neq 136$	(A)				{ b , c }	A A	ধধ	${A \choose B}$	${A \brace B}$	$\binom{A}{B}$
-	Suffix Fand SQ			102	,			101	101			T 05
_	Δ			1				1				
Djagram 2	Prefix Fand SQ		ት ፡፡	[ဗာ	83 85 85			79	51		51 52 61	
Ω	Divisive Affixes	171.11242171.3				171.1124,21241.1	+11+71.1+242		+71.2+242	±71.2±241.1	±71.2±71.3	+71.3
	Vts sub classes	11121	111b	11122		1122	11216	1121à	.121	122a	122b	13

		- 4 - 4 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1				e e to		
{ B , c }	A A	A A	${A \brace B}$	(A)	(BI)	$\binom{\mathrm{A_1}}{\mathrm{E}} \bigg\}$	±135 A1	(A1)
	101	101		1 05		112	101	
	1					↑	1	
	34	51	がみなって	d D		81	51	
±71.1±242±241.1 ±11±71.1±242		+71.2+242	±71.2±241.1 ±71.2±71.3	+71.3	+71.1+242+71.3	±11±71.2±242±71.3	+71.2 +71.2+71.3	+71.1+242+71.3
1122	1121a	.121	122a 122b	1,3	1, 211.	2121 221a	221b 222+	2122



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class need not be exemplified. Where one example will suffice to exemplify two or more larger sub-classes then only one example was used.

It is not necessary to give special Vi classification for those Vt which occur with 121-222 and are intransitivized. These V may comprise a special sub-class not only of Vt but also of the corresponding Vi. They may also keep the same class number. For example, members of Vts_1121b may have dual membership in Vt and Vi and could be listed in both classes with the same number.

The total phoneme sequence and source is given only in A. From B - F, when any or all of these are filled, only the inventory numbers or the affixes are given with the gloss and an underline means the same hase or root in A is occurring in B - F.

Sub-classes exemplified in table 1 are as follows:

Vtsl:)(91 in B

Vtsll: +71.1 in A, B)(71.2 and 71.3 without 71.1

Vtslll: ± 71.3 in A, B, F)(241.1 in A, B, F.

Vtsllla: ± 71.1 in C or D; + 121 in F

Vtslllal: +136

Vtsllla2:)(136

Vtslllb:)(71.1 in C or D

Vtslllbl:)(121 in F

Vtslllb2: +121 in F

class need not be exemplified. Where one example will suffice to exemplify two or more larger sub-classes then only one example was used.

It is not necessary to give special Vi classification for those Vt which occur with 121-222 and are intransitivized. These V may comprise a special sub-class not only of Vt but also of the corresponding Vi. They may also keep the same class number. For example, members of Vts_1121b may have dual membership in Vt and Vi and could be listed in both classes with the same number.

The total phoneme sequence and source is given only in A. From B - F, when any or all of these are filled, only the inventory numbers or the affixes are given with the gloss and an underline means the same base or root in A is occurring in B - F.

Sub-classes exemplified in table 1 are as follows:

Vtsl:)(91 in B

Vtsll: +71.1 in A, B)(71.2 and 71.3 without 71.1

Vtslll: ± 71.3 in A, B, F)(241.1 in A, B, F. Vtsllla: ± 71.1 in C or D; ± 121 in F

Vtslllal: +136

Vtsllla2:)(136

Vtslllb:)(71.1 in C or D

Vtslllbl:)(121 in F

Vtslllb2: +121 in F

```
Vtsll2: )( 71.3 in A, B, F.
        Vtsl121:)( 241.1
           Vtsl121a: )( 121 in F +71.1 in C, D
           Vtsl121b: +121 in F )( 71.1 in C, D
              Vtsl121b1: )( 11 + 121.1 )( 121.2
              Vtsl121b2: +11 )(121.1 + 121.2
        Vtsl122: +241.1
     Vtsl2: +71.2 )(71.1, 71.3 without 71.2
        Vtsl2l: )(121 in F \pm71.3 in A, B
        Vtsl22: +121 in F
           Vtsl22a: +241.1 in A, B. )( 71.3 in A, B, F.
           Vtsl22b: )(241.1 in A, B, \pm 71.3 in A, B, F.
     Vts13: )(71.1, 71.3, \pm71.3, + 121
     Vtsl4: )(71.1, 71.2, 71.3, 121.
    Sub-classes exemplified in table la are as follows:
       )(91
Vtrl:
  Vtrll: +71.1) (71.2 + 71.3 only with 71.1
     Vtrlll: )(121.1 in F +121.2 )( 71.1 inC-D
     Vtrl12: +121.1 in F )( 121.2 )( 71.1 in C-D
   Vtrl2: +71.2 )( 71.1 or 71.3 without 71.2
     Vtrl2l: +121.1 )( 121.2 in F
     Vtrl22: +121.2 )( 121.1 in F
      Vtrl23: )( 121.1 )( 121.2 in F
```

Sub-classes exemplified in table 2 are as follows:

Vts2: +91 in B

Vts 21: +71.1 in A, B)(71.2; \pm 71.3 only with 71.1

Vts211: \pm 71.1 in D + 121 in F

Vts212:)(71.1 in D

Vts2121: +121 in F

Vts2122:)(121 in F

Vts22: +71.2 in A, B)(71.1; \pm 71.3 only with 71.2

Vts221: +121 in F

Vts22la: +11)(135 Vts22lb:)(11 + 135

Vts222:)(121 in F

Vts23:)(71.3,)(71.1, \pm 71.3, +121

Sub-classes exemplified in table 2a are as follows:

Vtr2: + 91

Vtr20: +71.1, +121

Vtr21: +71.2,)(71.1; ± 71.3

Vtr211:)(121 in F

Vtr212: +121 in F

14.2.1 The tables show that the shift from transitive to intransitive in Havasupai is signalled by the occurrence of 222 in F. That is, Vts-221 in A-D goes to Vis-121-222 in F. A transitive verb cannot occur with 222 in F unless 121 occurs with it. But Vt can occur with 221 alone. On the other hand, Vi may occur with 222 without also occuring with 121.

Singular Person Plural Object (A)

'Plural Person Plural Object (B)

Vtslllal:

tó-təlpá (71.1.2-__) she touches presses them 80, B, p. 14.

touches many G,A,p.25. (71.1.2 -141-211-221) touches many G,A,p.25.

têt-swá·hi-k-wi (71.1.1-242-71.3- (71.1.1-242-71.3- 141-211-221) they open many.

tot-to0p&-1 (71.1.2-___-136) he pressed them in HSL, B, p. 3.

Vtsllla2:

ta-hi.n-ci-m (71.1.2-71.3-__-141-234) they move it 40,B,p.3.

tet-hi.nyi-k-wi (71.1.2-242-71.3--211-221) he moves them G,A,p.1.

tet-q. w-k-wi (71.1.1-71.3-242--211-221) he breaks them G,A,p. 27

kwi \cdot -n-kə (_-103-211) To go around a stick like a worm C,C

s-kwi.-n-k-wi (81-__-103-211-221) he twists his ear C,C

s-kwi--ti-kə $(8l-\frac{1}{2}-102-211)$ to turn or twist around 0,0

 $\theta = -kwi \cdot -k = (85 - 211)$ to wring it out C, C.

so-q ℓ m-k-wi (81___-211-221) he hits it C,C

(71.1.2-71.3-242-__-141-211-221) they move many.

(71.1.2-71.3-242-__-141-211-221) they break them. Plural Person Sing. Person Sing. Object (C) Sing. Object Plural Person Passive

(71.1.2-___-141-(71.1.2-)211-221)he 211-221) they touch touches it (71.1.1-___-141-(71.1.1-___ 211)he opens 211-221)they open it

(71.1.2-71.3-__-121-141-211-222) they are being touched (71.1.1-71.3-___-121-141-211-222) they are being opened

_(71.1.2-__-141-211-221)they move it (71.1.1-_ __-141-211-221)they break it

he moves it (71.1.1-)211-221)he

breaks it

(71.1.2-__-221) (71.1.2-242-71.3-121-141-211-222)they are being moved (71.1.1-242-71.3-121-141-211-222) they are being broken

Sub-classes exemplified in table 2 are as follows:

Vts2: +91 in B

Vts 21: +71.1 in A, B)(71.2; ± 71.3 only with 71.1

Vts2ll: +71.1 in D + 121 in F

Vts212:)(71.1 in D

Vts2121: +121 in F

Vts2122:)(121 in F

Vts22: +71.2 in A, B)(71.1; \pm 71.3 only with 71.2

Vts221: +121 in F

Vts22la: +11)(135 Vts22lb:)(11 + 135

Vts222:)(121 in F

Vts23:)(71.3,)(71.1, \pm 71.3, \pm 121

Sub-classes exemplified in table 2a are as follows:

Vtr2: + 91

Vtr20: +71.1, +121

Vtr21: +71.2,)(71.1; ± 71.3

Vtr211:)(121 in F

Vtr212: +121 in F

14.2.1 The tables show that the shift from transitive to intransitive in Havasupai is signalled by the occurrence of 222 in F. That is, Vts-221 in A-D goes to Vis-121-222 in F. A transitive verb cannot occur with 222 in F unless 121 occurs with it. But Vt can occur with 221 alone. On the other hand, Vi may occur with 222 without also occuring with 121.

Singular Person Plural Object (A)	Plural Person Plural Object (B)
Vtslllbl:	
ti-tinyú-ţi-k (71.1.3102- 211) they write them HSL,B,p.5	
te-tnyú·-ţi-k-wi (71.1.2-71.3- -102-211-221) he writes them G,A,p.3	(71.1.2-71.3102- 141-211-221) they write them.
té-te-nemá·kev-k-wi (71.1.1-71.3-84211-221) he races them G,A,p.6	(71.1.1-71.3-84141-211-221) they race them
Vtslllb2:	
tó-temóy-k (71.1.2-71.3- -132-211) they scratch them again 50,p.3	
tí-tmó·-k-wi (71.1.3-71.3- -211-221) he scratches many G,A,p.5	(71.1.2-71.3141- 211-221) they scratch many
$t\hat{\epsilon}$ -silé·l-k-wi (71.1.1-71.3- -211-221) he plows them $G, A, p.30$	(71.1.1-71.3141- 211-221) they plow them
Vtsll2la:	8
ti-tú-v (71.1.3101) he burns it 60,p.1	
tə-tú-v (71.1.1101) he burns them G,A,p.19	(71.1.1101-141) they burn them
ti-y5-v-ci-k-wi (64101- 141-211-221) they sharpen it 50,p.6.	
Vtsll2lbl	
tet-sedm-k-wi (71.1.2-242- -211-221) he closes them G,A,p.6	(71.1.2-242141-211-221) they close them.

 $(C) \qquad (D) \qquad (F)$

 $(\frac{-102-141-}{211-221) \text{ they}}$ $(\frac{-102-211-}{221) \text{ he writes}}$ write it it $(84-\frac{-141-}{211-221) \text{ they}}$ $(84-\frac{-211}{211-221) \text{ they}}$ he races it race it

(-141-211- (-211-221) (71.1.2- -121-222)
he scratches it they are being scratched scratch it

(-141-211- (-211)he (71.1.1- 121-141-211- 222)they plow it plowed

(71.1.1-___-101-__ (71.1.1\(\frac{2}{2}\)_- 141-211)they 101-211-221)
burn it he burns it

(__-141-211- (__-211-221) (71.1.2-242-__-121.1-221)they close he closes it 211-222)they are being closed

Vtsll2lb2:

ts-sci-k-wi (71.1.1-___-217-221) he sweeps them up G,A,p.30

(71.1.1 - 141 - 211 - 221)they sweep them up.

wê-sci-m-ce-k-wi-nye (ll-__-112-141-211-221-235) they swept it away. C,p.18

Vtsll22:

te-sp-á·y (71.1.1-___-241.1) they lean it 50,B,p.1

tet-sp-a:y-k-wi (71.1.2-242-241.1-211-221) he leans them G.A.p.4

(71.1.2-242-___-241.1-141-211-221) they lean them

to-tp-4:y-k-wi (71.1.2-___-241.1--211-221) he sticks them in G, A,

(71.1.2-__-241.1-141-211-221) they stick them

(With a singular object, the base in the first two examples in Vtsl122 is spå and the base in the last example in this same class is tapé.)

Vtsl21:

ci-cyúţi-k-wi (71.2.1-__-211-221) (71.2.1-__-141-211he sends them G, B, p.13

221) they send them

ci-y5.-v-ci-ke (71.2.1-71.3-__-101-141-211) they build them 60,0,p.10

ci-y5.-v-k-wi (71.2.1-71.3-___-101-211-221) he builds them G, B, p.1

(71.2.1-71.3-___-101-141-211-221) they build them

ci-ci-nal-k-wi (51-71.2.1-___-211-221) he hits them G,B,p.6

co-ky-2:y-k-wi (71.2.2-__-241.1- (71.2.2-__-241.1-141--211-221) he carries them G,B,p.26 211-221) they carry them. (The base in this last example is kiké.)

(C) (D) (F)

(-141-211- (-211-221)he (71.1.1- -121.2-141-221)they sweep sweeps it up 211-222)they are being swept up

(-141-211- (-211-221) (71.1.2-242- -241.1-221) they lean he leans it 121-211-222) they are being leaned against it (-141-211- (-211-221) (71.1.2- -241.1-121-221) they stick he sticks it in 141-211-222) they are being stuck on

 $(_{-1/1-211-221})$ $(_{-211-221})$ they send it he sends it

 $(\frac{-101-141-}{211-221})$ they ne builds it build it

(__-141-211- (__-211-221) (71.2.2-__-241.1-121-221)they carry he carries it 141-211-222)they are being carried

(3)

(A)

Vtsl22b:

36 2

Vtsl3:

Some members of Vtsl4 are: tanko to throw and yimeyko to be heavy.

 $(C) \qquad (D) \qquad (F)$

(52-__-211-(52-71.2.2-__-121-141-(52-__-141-211-211-222) they are being 221) they fix it 221)he fixes it fixed (71.2.2-__-121-141-(__-211-221) he traps it (-141-211-221)they trap 211-222) they are being trapped $(\underline{}-102-221)$ he finishes it (__-102-141-(71.2.2-___-102-121-141-211-222)they are 211-221)they finished finish it

(-141-211) (-211-221) (71.3- -121-141-211they kick it he kicks it 222) they are being kicked (-141-211- (-211-221) (71.3- -121-141-211-221) they pull he pulls it 222) they are being pulled (A)(3)

Vtrlll:

tá-ta-6.ji-k-wi (71.1.2-84--211-221) he props them up G, A, p.11 (71.1.2-84- -141-211-221) they prop them up

tet-sev-k5.-k-wi (71.1.1-71.3-242-82-___-211-221)he fenced them G, A, p.5

(71.1.1-71.3-242-82-_-141-211) they fenced

tov-k6-ko (83-___-211) he blocks it

sə-púl-kə (Gl- $\underline{}$ -211)he soaks it G,A,p.5

ta-kwi-ka (84-___-211) he lines it up G,A,p.14

Vtrll2:

tó-to-ká·-v (71.1.2-84-___-101) they gather them DWT2 p.3

tot-ká-v-k-wi (71.1.2-84-___-101-211-221) he gathers them G,A, p.10

(71.1.2-84-___-101-141-211) they gather them

Vtrl21:

ví-ci-ná:m-k-wi (62-71.2.1-__-211-221) she sews them G, B, p. 7

(62-71.2.1-__-141-211-221) they sew them

Vtrl22:

cí-ci-kyá•t-ci-k (51-71.2.1-141-211) they cut them(wood) 50,A,p.l

cí-ci-kyé·t-k-wi (51-71.2.1-___ (51-71.2.1-___-141-211-211-221) he cuts them G,B,p.20 221) they cut them

kí-ci-tkó·-k-wi (61-71.2.1-___ (61-71.2.1-___-141-211-211-221)he ties them G,B,p.21 221) they tie them

(3) (F) (D)

sewn

221)he sew**s** it

221)they sew it

```
(52-__-211-
                                     (52-71.2.2-__-121-141-
(52-__-141-211-
                   221)he fixes it
221) they fix it
                                      211-222) they are being
                                     fixed
                                     (71.2.2-__-121-141-
(___-141-211-
                  (___-211-221)
221) they trap
                                      211-222) they are being
                  he traps it
                                     trapped
                                               -102-121-141-
  _-102-141-
                   (_{-102-221})
                                     (71.2.2-_
                                      211-222)they are
                  he finishes it
 211-221) they
                                     finished
finish it
```

(F)

(--141-211) (--211-221) (71.3--121-141-211they kick it he kicks it 222) they are being kicked

(--141-211- (--211-221) (71.3--121-141-211-221) they pull he pulls it 222) they are being pulled

Table la (cont/d)

(A)

(B)

te-kyét-ke (84-___-211) he cuts meat G,B,p.20

Vtrl23:

kí-ci-ná·-vi-k-wi (61-71.2.1-71.3--101-211-221) he tells them G,B,p.8

(61-71.2.1-71.3- -101-141-211-221) they tell many things

yi-ci-ny5v-ci-kə (52-71.2.1-_-141-211) they hoe them DWT2 p.11

Table 2

Vts211:

te-swi:-m (71.1.2-71.3-___-234) they scrape it 13J, N, p.1

tεt-swi:-k-wi (71.1.1-71.3-242-___-211-221) he scrapes them G,A,p.1

(71.1.1-242-___-91-141-211-221) they scrape them

Vts2121:

te-s-cá--ci-k (71.1.1-81-71.3--141-211) they stick it in DWT2, B, p. 2a

te-s-cá-k-wi (71.1.1-81____211-221)he sticks them in G,A,p.6

(71.1.1-81-___-91-141-211)they stick them in

tε-shά-ce-θi-k (71.1.1-_-141-192-211) they hang them awhile 6C, B, p. 3

tet-sehá-ci-k-wi (71.1.1-242-__-141-211-221) he hangs them G,A,p.5 (71.1.1-242-___-91-141-211) they hang them

Vts2122:

tó-tinyú-ci-k-wi (71.1.2-__-141- (71.1.2-__-91-141-211) 211-221)he follows them G,A,p.4 they follow them

 $(C) \qquad (D) \qquad (F)$

(61-___-101-141- (61-__-211-211)they tell him 221)hectells it

(71.1.1-242- - (71.1.1- - (71.1.1-242- -121-211-141-211-221)they 211-221)he scrape it scrapes it scraped

 $(\underline{ -141-211})$ $(\underline{ -211-221})$ they follow it he follows it

Table 2 (cont'd)

(A) (B)

Vts22la:

ci-c-yá:-ci-m-ci-k (51-71.2.3-71.3-____-91-112-141-211) they send them HSL,F,p.5

cî-c-yá.-mi-k (51-71.2.3-__-112-211) he sends them G,B,p.5

(51-71.2.3-71.3-___-91-112-141-211) they send them

wé-ci-yá-m (11-51-__-112) he mends it away C,C

Vts221b:

ce-wi-c-ci-k (71.2.2-____91-141-211) they do them 13J, E, p.9

cə-wi-k-wi (71.2.2-__-211-221) he does them

(71.2.2- -91-141-211-221) they do them

wi-mo $(\underline{}-135)$ I think he did PW,R,p.3

Vts222:*

cí-ci-yá-ci-v-k-wi (51-71.2.1-____91-101-211-221) he orders them G,B,p.5

(51-71.2.1-71.3-_-91-101-141-211-221) they order them

Table 2a

Vtr20:

tá-se-kwá-ci-k (71.1.2-81-___-91-211) he put them in 80, N,p.1 (71.1.2-81-___-91-141-211) they put them in

Vtr211:

kî-c-ná-ci-k-wi (61-71.2.3-__-141-211-221) he points at them G,B,p.2

(61-71.2.3-___-91-141-211-221) they point at them

^{*} Vts23 is exemplified after Vtr212 on the next page.

 $(C) \qquad (D) \qquad (F)$

(51-__-112-141) (51-__-112)he (51-71.2.1-__-112-121they send it sends it 141-222)they were sent

(__-141-211- (__-211-221) he (71.2.1-__-121-211-221) they do it does it 222) they were done

(61-__-141-211- (61-__-211-221) 221) they point he points at it at it

(B)(A)

Vtr212:

cî-c-kwá-ci-ci-m (51-71.2.3-__ 91-141-234) they put them in there HSL, E, p.2

cí-ci-k-ná-ci-k (51-71.2.1-61--91-211) he plans many things $\overline{G,B},p.13$

(51-71.2.1-61-___-91-141-211-221)they plan them

ki-cpáci-ci (61-___-91-141) they fire them LS, B'p.19

ci-c-mi-c-ci-m (51-71.2.3-_ 91-141-234) they put them in here DWT1 p.15

ci-c-mi-ci-k-wi (51-71.2.3-___- (51-__-91-141-211) 91-211-221)he put us in there G, B, p.1

they put us in there

Vts23:

kyá:-ci-ci-m (___-91-141-234) they shoot them B,p.22.

kyá-ci-k-wi (___-91-211-221) he shoots them G,C,p.3

(___-91-141-211-221) they shoot them

cá--ci-k-wi (___-91-211-221) he pours them G,C,p.3

(___-91-141-211-221) they pour them

 $(C) \qquad (D) \qquad (F)$

(51-61- -141- (51-61- -211- (51-71.2.1-61- -91-211-221) they plan 221) he plans it 121-121-222) they it

(51- -141-211) they (51- -211-221) (51-71.2.3- -91-121-put it in there he put it in there put in there put in there

(__-141-211-221) (__-211-221)he (__-91-121-141-211they shoot it shoots it (__-141-211-221) (__-211-221)he (__-91-121-141-211they pour it pours it (__-91-121-141-211pours it poured (A)

(B)

Vtr212:

cî-c-kwá-ci-ci-m (51-71.2.3-__-91-141-234) they put them in there HSL,E,p.2

cí-ci-k-ná-ci-k (51-71.2.1-61--91-211)he plans many things G,3,p.18

(51-71.2.1-61-__ -91-141-211-221) they plan

ki-cp**ź**ci-ci (61-___-91-141) they fire them LS, B'p.19

ci-c-mi-c-ci-m (51-71.2.3-___-91-141-234) they put them in here DWT1 p.15

ci-c-mi-ci-k-wi (51-71.2.3-__- (51-__-91-141-211) 91-211-221)he put us in there G, B, p.1

they put us in there

Vts23:

kyá:-ci-ci-m (___-91-141-234) they shoot them B, p.22.

ky(-ci-k-wi) (-9l-2ll-22l) he shoots them (-9l-2ll-22l)

cá-ci-k-wi (__-91-211-221) he pours them G,C,p.3

(___-91-141-211-221) they pour them

(C) (D)

(51-61- -141- (51-61- -211- (51-71.2.1-61- -91-211-221) they plan 221) he plans it 121-121-222) they it are planned

(F)

(51- -141-211) they (51- -211-221) (51-71.2.3- -91-121put it in there he put it in there 141-211-222) they were put in there

(__-141-211-221) (__-211-221)he (__-91-121-141-211they shoot it shoots it (__-141-211-221) (__-211-221)he (__-91-121-141-211they pour it pours it (__-91-121-141-211-222)they are being poured

Like person actor, the distributive goal may be marked redundantly in the verb Havasupai. Except for the nonoccuring combinations of the prefixes 71.1 and 71.2, the operators 71.3 and 241, and 241 with 91 in any sequences, all the other possible combinations of the distributive goal allomorphs occurred in a single verb word in the tables. That these are allomorphs, although they may co-occur, can easily be shown by comparing occurrences in the different columns. 71.1 occurs alone, that is without 71.2, 71.3, 91 and 241.1, in A, B in some sub-classes. In A, B it optionally occurs with 242 and is incompatible with it in C, B. Particularly in A where there is a singular person and plural object marked, is the function of 71.1 in Vtsll, 21 and Vtrll, 21 most clear. Here it cannot be a plural actor. The same can be said for 71.2 and 71.3 when they occur with their respective sub-classes. For example, like 71.1, 71.2 and 71.3 occur alone in A in some sub-classes where only plural goal is merked. 91 occurs alone only in Vts23 in B. But there it cooccurs with a suffix having the same phonemic shape, 141. Therefore, this occurrence should be bolstered by another. In F, there is evidence that 141 and 91 are different suffixes since in the subclass Vts2121, for example, they occur with 121 between them in the sequence 91-121-141.

Only 241.1 did not occur alone in A or B. But in A where there is a singular person it occurs with 71.1 and it occurs aga in B with 141, plural person, and does not occur in C,D. In these contrastive occurrences, 241.1 could only mark plural

Like person actor, the distributive goal may be marked redundantly in the verb Havasupai. Except for the non-occuring combinations of the prefixes 71.1 and 71.2, the operators 71.3 and 241, and 241 with 91 in any sequences, all the other possible combinations of the distributive goal allomorphs occurred in a single verb word in the tables. That these are allomorphs, although they may co-occur, can easily be shown by comparing occurrences in the different columns. 71.1 occurs alone, that is without 71.2, 71.3, 91 and 241.1, in A, B in some sub-classes. In A, B it optionally occurs with 242 and is incompatible with it in C, B. Particularly in A where there is a singular person and plural object marked, is the function of 71.1 in Vtsll, 21 and Vtrll, 21 most clear. Here it cannot be a plural actor. The same

distributive goal. Now once 71.1, 91, 71.3, 71.2 have been cut in A, B, the same individual phoneme sequences occurring in sub-classes Vtslll, Vtsl22b in A, B or F and Vts l2l in A, B and Vts2l, 22, 23in A, B, can only be the same affixes occurring in combination, redundantly. That 24l.1 occurs with 7l.1 in A, B in sub-class Vts l122, for example, fits this redundant pattern. In the respect that it does not occur in C, D and occurs in F it simply follows the behavior in 7l.2, 7l.3 and 9l. For these reasons all of these affixes have been set up as allomorphs which may occur together redundantly.

The distributional statements for them are based on phonological and morphological information. None of the several occurrences of all these allomorphs but 241.1 can be predicted purely on phonemic information. 241.1 may be predicted purely phonologically. Its distribution is phonologically non-automatic and non-freely varying.

For the other allomorphs, one must also know what allomorph actually does occur with what sub-class, to the exclusion of the other allomorphs e.g. with the other sub-classes Vtsll, 12, 13 or in restricted combinations e.g. Vtsl122 and Vtslllal, before their distributional rules can be formulated.

The distributions of 71.1 and 71.2 include two types of non-automatic phonological conditioning, automatic conditioning and also morphological conditioning. The first type of non-automatic conditioning combines a free variant and non-free variant alternation of

distributive goal. Now once 71.1, 91, 71.3, 71.2 have been cut in A, B, the same individual phoneme sequences occurring in sub-classes Vtslll, Vtsl22b in A, B or F and Vts 12l in A, B and Vts21, 22, 23in A, B, can only be the same affixes occurring in combination, redundantly. That 24l.1 occurs with 7l.1 in A, B in sub-class Vts 1122, for example, fits this redundant pattern. In the respect that it does not occur in C, D and occurs in F it simply follows the behavior in 71.2, 71.3 and 91. For these reasons all of these affixes have been set up as allomorphs which may occur together redundantly.

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The distributions of 71.1 and 71.2 include two types of non-automatic phonological conditioning, automatic conditioning and also morphological conditioning. The first type of non-automatic conditioning combines a free variant and non-free variant alternation of

the vowels in 71.1 or 71.2. For example, in 71.1 te-"to-"ti-"tibefore all initial consonants. This also applies to 71.2. That is,
ci-"co- before all consonants. However, only to- and co- occur
before vowels. For example, co-5n-k (72.2.2-Vts 122b-211) he hunts
it 5C, pg.3.to-6m-ko (71.1-Vts212al-211) He chased them C, p. 5.
See tables for the distributions for the other vowels in the allomorphs
of 71.1 and 71.2. Only before vowels were the alternations of the
vowels in these allomorphs non-freely varying.

The second type of non-automatic alternation must include in the same rule an automatic alternation. This rule refers to the initial consonant of 71.1 and 71.2 and the initial consonant of the root or base. That is, 71.1 occurs before roots or bases beginning in only certain consonants and 71.2 occurs only with other initial consonants. Now it is only in some cases that I know that the phoneme sequence /ci/and/or the prefix 71.2 occurs in the whole corpus before an initial consonant with which only 71.1 occurs. /ci/and 71.1 may occur before /s/ and /t/. For examples of 71.1 see tables. /ci/occurs before /s/ and /t/ in cisé bird and ci-té Father. In all their other occurrences, e.g. /c+V/ before /1, h/ and /t+V/ before c only c or t occurred in the whole corpus. In these sequences c did not occur before 1, h and t did not occur before c. Therefore before these consonants the alternation between 71.1 and 71.2 is automatic.

But before /s, t/ the alternation is non-automatic and morphologically conditioned. The alternations then of 71.1 and 71.2 here combines morphological and phonological non-automatic and automatic conditioning.

Following are examples of more morphological and phonological alternations of 71.1 and 71.2. The initial phonemes with which 71.1 occurred in the corpus were /t, s, h, q, n, 1, m, v/. 71.2 occurred with all others except /p/. However, 71.2 also occurred with /q, m, n/. For example, 71.1 occurred with q in example 2 in Vtslllal. An example of 71.1 before /m/: tə-mwź:-k (71.1Visl121-211) They heat it 9C, B, pg. 2. Before n: ti-nwiţi-k-wi (71.1-Vtsllla2-211-221) He cooks them G, A, pg. 5. 71.2 with q: ci-qám-k-wi (71.2-Vtsl22b-211-221) He hits them G, B, pg. 2. Before m: mi-ci-máni-k (32-71.2-Visl22b2-211) You fall down them PW, B, pg. 19. Before n: ci-nźh-k-wi (71.2-Vtsl22b-211-221) he killed them G, B, pg. 16.

The rules then for 71.1 and 71.2 would include all the five consonant phonemes with which only 71.1 occurs. These include non-automatic and automatic alternations. The rules would also include those occurrences where 71.1 and 71.2 occurred before the same consonant phonemes and the rule of to- and co- before vowels. These rules include morphological and phonological alternations. There would be three morphological rules but q, n with 71.2 occurred in the same class, Vtsl22b.

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The case of 241.1 is much shorter. In the tables and corpus it only occurs where $/\epsilon/$ is the vowel it replaces. Therefore 241.1 is phonologically non-automatically conditioned.

It can easily be seen from the tables that 91 and 71.3 cannot be predicted phonologically. They are both morphologically conditioned.

The occurrences of these five allomorphs in F are optional. None but 71.1 occur in C or D. It is possible that 71.1 has a double function—optionally occurring with 242 in A, B as a plural distributive goal and without it in C, D as a singular goal. When occurring with 121 in F, the allomorphs seem to function as redundant markers of plural actor since in the singular passive only 71.1 may optionally occur without 242. For example, ci-ci-ndl-vi-ci-k-yu (51-71.2-Vts122b-121-141-211-222) they were hit G, B, pg. 6. ci-ndl-vi-k-yu (71.2-Vts122b-121-211-222) it is hit G, B, pg. 6. têt-s-kwi-n-vi-ci-k-yu (71.1-242-81-Vts112lbl-102-121-141-211-222) they were turned G, A, pg. 18. te-s-kwi-n-vi-k-yu (71.1-81-Vts112lbl-103-121-211-222) it is turned G, A, pg. 18. These examples also illustrate the case with the other allomorphs. In F their goal function is suspended and they either don't have any functions or together with the plural actor morphemes they are redundant markers of plural actor.

Since the plural actor morphemes are optional, then the plural goal affixes appearing also in F may occur alone as actor suffixes and prefixes. It may be the case that they occur in F without any particular

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Since the plural actor morphemes are optional, then the plural goal affixes appearing also in F may occur alone as actor suffixes and prefixes. It may be the case that they occur in F without any particular

function since actor is optionally marked in the verb anyway. However, the plural actor allomorphs never occur in environments where they might be plural goals. Except for 241.1 which definitely marks plural person, only the plural goal affixes occur in ambiguous environments. So 70 and 91 are allomorphs of 141, 241.1 which are the plural actor allomorphs. But 141, 241.2 never function as plural goals and therefore are not allomorphs of 70 and 91. The morpheme then of plural actor would include 70, 91, 141, 241.1.2 but the plural goal morpheme would include only 70, 91, 241.1.

141 and 241.2 are morphologically conditioned. See tables for 141. Examples of 241.2 are: pi-h (Vis212b-171) he will die J3, N, pg. 9. p-úi- (Vis212b-241.2) they die CA, O, pg. 5. Other verbs with a CV base take 141 as a plural actor, so 241.2 must be morphologically conditioned: mi-kə (Vis212al-211) he cries C, C mi-cə (Vis 212al-141) they cry C, C.

For Vt, by these tables, it is possible to predict what affix sequences a particular word will occur with by just knowing one or two of its occurrences in A-F. Of course these rules would have to be memorized or some cues devised to remember the other sequences for a given class. For example, an occurrence in F would signal whether a word belongs in Vts or Vtr, if one knew their roots from their bases, and, if Vts, whether it was Vtsll (71.1), 12 (71.2), 13 (71.3) and that it was definitely not any one of the Vts2 sub-classes.

If it was Vtsll, the occurrence in F would tell us whether or not it was Vtslll, or Vtsll2, and if Vtslll, whether it was Vtsllbl or Vtslllb2 or Vtslllal since only Vtslllbl does not occur with 121 in F and therefore is incompatible with 71.1 in C. However, in order to know if the class was Vtsllla or Vtslllb, C or D would have to be known. But these would be the only two environments needed to locate any word in any one of the two major sub-classes and also any one of the sub-classes of either one of them. For Vts2 a knowledge of only F and D would have the same use as F and C or D have for Vts1. Much the same applies to roots.

14.2.2 There were very few occurrences of formatives with the goal affixes in Vi. Most occurred in Vir. Diagram 3 given below presents the generalized sequences that occurred in the 6 major sub-classes of Vi: Virl, 2, Visl2, 11, 22, 21. For the actual occurrences see examples below. Diagram 3 gives all the status-quo and formative combinations that occurred in the corpus in Vi with the information necessary for sub-classification for Vi. The letter A here signals the suffix sequence (141-211-222). B here is the same as in Vt and Alhere is (+91+141+211+222). Bl here means that 241.1 substitutes for 141 in B. Alignary here means that 241.1 and 241.2 respectively substituted for 141 in A.

The basis for sub-classification of Vir and Vis is 1) occurrence

or non-occurrence with 70 to become transitivized; 2) with 53; 3) with 54; 4) with 121 which with Vi is an activizer; 5) with any one of three plural actor allomorphs, 241.1, 241.2, 141.; 6) occurrence with 11, 135, or 136.

Diagram 3

- 1. All sequences but formatives are optional.
- 2. + means an affix or affix sequence occurs as a divisive with one or another sub-class.
- 3. All sequences given here except formatives and status-quos may not occur and/or may not occur in these orders. For sequences I judged to be grammatical or ungrammatical see 14.3.

	Divisive Prefixes	Prefix Formatives or Status-quo		Suffix Formatives or Status-quo	Suffix Divisives and other Affix Sequences
Virl,2	11 71.2	51 52 61 62→81		102	(A) (B)
Visll	71.1 71.2 241.1 5 }				(A) (B1)
Visl2	11 54 71.1 71.2	84 62	→	112 102	(A (Al - 135) (B - 136)
Vis2l	11 5 4			110	A A ² A ³ B
Vis22	5 3				A Bl

If it was Vtsll, the occurrence in F would tell us whether or not it was Vtslll, or Vtsll2, and if Vtslll, whether it was Vtsllbl or Vtslllb2 or Vtslllal since only Vtslllbl does not occur with 121 in F and therefore is incompatible with 71.1 in C. However, in order to know if the class was Vtsllla or Vtslllb, C or D would have to be known. But these would be the only two environments needed to locate any word in any one of the two major sub-classes and also any one of the sub-classes of either one of them. For Vts2 a knowledge of only F and D would have the same use as F and C or D have for Vts1. Much the same applies to roots.

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The basis for sub-classification of Vir and Vis is 1) occurrence

Vir has only two sub-classes: Virl which occurred with 70 and Vir2 which was incompatible with 70. For examples of Virl see examples 57 a-c, 58. For examples of Vir2 see examples 55b, 56a. Fir2 is divided into Vir21 (+121) and Vir22 () (with 121): kə-5t ivi-m (61-Vir21-121-234) He is on the edge SR, pg. 12. Vir22 is divided into Vir221 (+11) and Vir 222 () (with 11): ws-n-ci-pd-m (11-21-51-Vir221-234) when it comes out HSL, pg. 4.

Vis is divided into Visl (+70) and Vis2 ()(with 70). Visl is divided into Visl1 (+53) and Vis 12 ()(with 53). The sub-classes of Visl2 are: Visl2l (+121) and Visl22 ()(with 121). Visl2l and Visl22 may each be further sub-divided into Visl2la and Visl22a (+71.1,)(with 71.2) and Visl2lb, Visl22b (+71.2)(with 71.1). Visl2lahas two sub-classes, Visl2lal (+22l (syntactically) +135)(with 91) and Visl2la2 ()(22l, 135 +91). Visl2lb has two sub-classes, Visl2lbl ()(135, 136, 54, 91) and Visl2lb2 (+22l (syntactically) +135, 136, 54, 91). Visl22b has two sub-classes, Visl22b1 (+11) and Visl22b2 ()(11).

Visl1 is sub-divided into Visl11 (+241.1)(141, 241.2) and Visl12 (+141)(241.1, 2). The two subclasses of Visl12 are: Visl121 (+71.1)(71.2) and Visl122 (+71.2)(71.1).

va-qéci-m (5j-__-234) It's becoming small BS, pg. 29.

Examples of Visll21 are: háni-k-yu (__-211-222) it is good 8C, V, pg. 3. to-hán-ci-k (71.1-__-141-211) they do it well 5J, V, pg. 9. hán-cu-m (__-141-234) They are good B, V, pg. 1. vo-há:ni-m (53-_-234) It's getting good PDLS, V, pg. 8.

Examples of Visll22 are: cimíyó·w-k-yu (__-211-222) It is high B, pg. 7. cí-cimíyəw (71.2-__) They are getting it higher B, pg. 20. címiyów-ci-m (__-141-234) They are high C, C. və-cimiyów (53-__) It s getting high C, C.

Vis12lal and Vis12lb2 may occur with 22l by the rule that all Vi that occur with 70 may occur with 22l, but in addition, these two subclasses may occur with 22l without also occuring with 70 by a syntactic rule: when these sub-classes occur finally after a Vt they may optionally occur with 22l. That is 22l may occur on the Vt or on either one of these bases which follow it. When these sub-classes follow a Vi they optionally occur with 222. Examples of Vis12lal are: kak + nyahmit-v2 + t2-5pi-k-yu (P + Vis2llb - 12l + 84-Vis12lal-12l-2ll-222) he didn't hurt himself C, pg. 16. tempit >-wi + t2-5-v->-wi (Vts11la2-22l + 84-Vis12lal-12l-16l-22l) He didn't fill it C, A, pg. 18. Examples of other divisive affixes with Vis12lal are: t2-t2-5p-ti-k (71.1-84-___-151-21l) They didn't make it 8C, pg. 10. ú-v-> (__-12l-125) I don't think so DWT1, pg. 6.

va-qéci-m (5)-__-234) It's becoming small BS, pg. 29.

Examples of Visll21 are: háni-k-yu (__-211-222) it is good 8C, V, pg. 3. to-hán-ci-k (71.1-__-141-211) they do it well 5J, V, pg. 9. hán-cu-m (__-141-234) They are good B, V, pg. 1. vo-há:ni-m (53-__-234) It's getting good PDLS, V, pg. 8.

Examples of Visl122 are: cimíyé·w-k-yu (__-211-222) It is high B, pg. 7. cí-cimíyew (71.2-__) They are getting it higher B, pg. 20. címiyéw-ci-m (__-141-2.4) They are high C, C. ve-címiyéw (53-__) It s getting high C, C.

Visl2lal and Visl2lb2 may occur with 221 by the rule that all Vi that occur with 70 may occur with 221, but in addition, these two subclasses may occur with 221 without also occuring with 70 by a syntactic rule: when these sub-classes occur finally after a Vt they may optionally occur with 221. That is 221 may occur on the Vt or on either one of these bases which follow it. When these sub-classes follow a Vi they optionally occur with 222. Examples of Visl2lal are: kak + nyahmít-v2 + te-5pi-k-yu (P + Vis2llb - 121 + 84-Visl2lal-121-211-222) he didn t hurt himself C, pg. 16. təmpít >-wi + tə-5-v->-wi (Vtsllla2-221 + 84-Visl2lal-121-161-221) He didn t fill it C, A, pg. 18. Examples of other divisive affixes with Visl2lal are: té-tə-5p-ti-k (71.1-84-___-151-211) They didn t make it 8C, pg. 10. ú-v-> (___-121-1.5) I don t think so DWT1, pg. 6.

Examples of Visl2la2 are: sp5 (___) he knows C, V, pg. 19.

sp5:-v-hi-k-yu (__-121-171-211-222) he will know it C, B, pg. 46.

tε-sp5:-nyə (71.1-__-235) I knew them B, V, pg. 40. sp5-cú-v
(__91-121) they know C, C.

Examples of Visl2lbl are: cikpá-k-yu (__-211-222) he climbs C, C. cikpá-və (__-121) he climbs C9, A, pg.33. ci-cikpá-k-wi (71.2-__-211-221) he climbs them G, B, pg. 22.

Examples of Visl2lb2 are: yú-m (__-2/4) it is PW, N, pg. 21.
yú-1-k-yu (__-1/6-211-222) he is in there LS, N, pg. 1. ci-yú-v
(71.2-__-121) they are doing it B, V, pg. 12. yú-v (__-121) it is
LS, C, pg. 1. yú-mo (__-155) I think so PW, L, pg. 9.

Examples of Visl22a are: sqitvu-k (__-211) it is striped C, C. tə-sqitvu-k (71.1-__-211) They stripe it 5C, F, pg. 15.

Examples of Vis122bl are: vi-yá-mi-k (62-__-112-211) He runs CA, C, pg. 8. ci-vi-yá-m (71.2-62-__-112) He runs them CA, C, pg. 1. wê-ci-vi-yá-m (11-71.2-62-__-112) They chase them away C, C. (Another example of this sub-class with status quos is example 96.)

Examples of Vis122b2 are: méni-k (__-2ll) he falls down PW, N, pg. 12. mí-ci-méni-k (32-71.2-__-2ll) You fall down them PW, C, pg. 19.

Vis2 is sub-divided into Vis21 ()(53) and Vis22 (+53). The subclasses of Vis21 are: Vis211 (+121, 141) and Vis212 ()(121). Vis211 is divided into Vis2lla (+54) and Vis2llb ()(54). Vis2l2 is divided into Vis2l2a (+141,)(241.1, 241.2), Vis2l2b (+241.2,)(141, 241.1) and Vis2l2c (+241.1,)(141, 241.2). Vis2l2a is divided into Vis2l2al ()(54, 11), Vis2l2a2 (+54,)(11), Vis2l2a3 (+11,)(54).

Examples of Vis2lla are: i-k (__-211) he says it BS, N, pg. 16.
i-ci-m (__-141-2:4) they say it SR, N, pg. 16. va-i-k (54-__-211)
he says it CA, pg. 14.

Examples of Vis2llb are: kwó:w-k (__-2ll) I talk B, N, pg. 40.

kwów-vi-ci-k-yu (__-12l-14l-2ll-222) they are talking C, A, pg. 15.

Examples of Vis212al are: sə-vɔ-k (81-__-211) He waits C, C. sə-vɔ-ci-k-yu (81-__-141-211-222) They wait C, C. (For other examples of Vis212al occurring with status-quo affixes 52, 102, 110, 101 see examples 65c, 71b, 73b, 75, b, d, 76b, c.

Examples of Vis212a2 are: wá-m (__-112) he takes it over there

B, pg. J. wá-m-ci-m (__-112-141-234) they take it over there LS,

pg. 4. və-wá-ci-m (54-__-141-234) they take it over there LS, pg. 18.

Examples of Vis212a3 are: yά-m-ci (__-112-141) They are going TW, A, pg. 5. wε-mi-yά·-m (11-32-__-112) You go away PW, A, pg. 12. (With status-quo sequences in this sub-class in 62__+102 see examples 80c, d, h.)

Examples of 212b are: pi-h (__-17i) he will die J, N, pg. 9.
p-úi (__-241.2) they died CA, O, pg. 5.

Examples of Vis212c are: tév-k-yú-nyə (___-211-222-235) he is

divided into Vis2lla (+54) and Vis2llb ()(54). Vis2l2 is divided into Vis2l2a (+141,)(241.1, 241.2), Vis2l2b (+241.2,)(141, 241.1) and Vis2l2c (+241.1,)(141, 241.2). Vis2l2a is divided into Vis2l2al ()(54, 11), Vis2l2a2 (+54,)(11), Vis2l2a3 (+11,)(54).

Examples of Vis2lla are: i-k (__-211) he says it BS, N, pg. 16.
i-ci-m (__-141-2:4) they say it SR, N, pg. 16. va-i-k (54-__-211)
he says it CA, pg. 14.

Examples of Vis2llb are: kwó:w-k (__-2ll) I talk B, N, pg. 40.

kwów-vi-ci-k-yu (__-12l-14l-2ll-222) they are talking C, A, pg. 15.

Examples of Vis2l2al are: sə-vɔ-k (81-__-211) He waits C, C. sə-vɔ-ci-k-yu (81-__-141-211-222) They wait C, C. (For other examples of Vis2l2al occurring with status-quo affixes 52, 102, 110, 101 see examples 65c, 71b, 73b, 75, b, d, 76b, c.

Examples of Vis212a2 are: wd-m (__-112) he takes it over there

B, pg. 3. wd-m-ci-m (__-112-141-234) they take it over there LS,

pg. 4. va-wd-ci-m (54-__-141-234) they take it over there LS, pg. 18.

Examples of Vis212a3 are: yά-m-ci (__-112-141) They are going TW, A, pg. 5. wε-mi-yά·-m (ll-32-__-112) You go away PW, A, pg. 12. (With status-quo sequences in this sub-class in 62__+102 see examples 80c, d, h.)

Examples of 212b are: pi-h (__-171) he will die J, N, pg. 9.
p-úi (__-241.2) they died CA, O, pg. 5.

Examples of Vis212c are: tév-k-yú-nyə (___-211-222-235) he is

playing C, J, pg. 11. t-\u00e4y-k-yu (__-241.1-211-222) they are playing C, A, pg. 8.

Vis22 is divided into Vis221 (+121) and Vis222 ()(121).

Examples of Vis221 are: té-ti-k (__-151-211) there were many

J, V, pg. 6. ma-té-v (22-__-121) you get a lot 12J, V, pg. 2. v-té

(53-__) its becoming heavy 5J, V, pg. 12.

Examples of Vis222 are: və-kwáθ (53-__) it's becoming brown
9C, V, pg. 15. kwáθ-ci-k-yu (__-141-211-222) they are brown C, C.

Naffix sequences which did not occur in the corpus fall into two groups: first, those I judge to be incompatible with all V sub-classes for the language and therefore will not occur in some future corpus, and second, those affix sequences which did not occur in the present corpus, but I think will occur in some future corpus. I really don't know what the basis is for classing a given affix in one group or another. The incompatible sequences include all those affixes which occur in the same decade except decade 70. Although only 51-61, 62-81 occurred as prefix formatives, I think that all the other possible combinations of formatives and status-quo affixes are possible. The affixes I think are incompatible are: 133, 161. 91, 70, only occur with 222 when 121 occurs: ill)(221, 133, 161, 121, 130, 91, 70; 135)(with all affixes but 141, 181, 234; 121)(221; 201)(with all of 230 but 234; 201)(21; 232)(with all affixes but 211, 32, 141; 233) (with all affixes but 141; 121) (130, 161, 91; 136)(with all affixes but 211 ± 222 ; 151)(171; 192)(235, 151, 171, 231, 235;

playing C, J, pg. 11. t-áy-k-yu (___-241.1-211-222) they are play ing C, A, pg. 8.

Vis 22 is divided into Vis 221 (+121) and Vis 222 ()(121).

Examples of Vis22l are: té-ti-k (__-151-211) there were many

J;, V, pg. 6. ma-té-v (12-__-121) you get a lot 12J, V, pg. 2. v-té

(53-__) its becoming heavy 5J, V, pg. 12.

Examples of Vis222 are: va-kwáθ (53-__) it's becoming brown
9C, V, pg. 15. kwáθ-ci-k-yu (__-141-211-222) they are brown C, C.

Naffix sequences which did not occur in the corpus fall into two groups: first, those I judge to be incompatible with all V sub-classes for the language and therefore will not occur in some future corpus, and second, those affix sequences which did not occur in the present corpus, but I think will occur in some future corpus. I really don't know what the basis is for classing a given affix in one group or another. The incompatible sequences include all those affixes which occur in the same decade except decade 70. Although only 51-61, 62-81 occurred as prefix formatives, I think that all the other possible combinations of formatives and status-quo affixes are possible. The affixes I think are incompatible are: 133, 161. 91, 70, only occur with 222 when 121 occurs: 111)(221, 133, 161, 121, 130, 91, 70; 135)(with all affixes but 141, 181, 234; 121)(221; 201)(with all of 230 but 234; 201)(21; 232)(with all affixes but 211, 32, 141; 233)(with all affixes but 141; 121)(130, 161, 91; 136)(with all affixes but 211, 22, 141; 232)(with all affixes but 141; 121)(130, 161, 91;

236)(with all affixes but 141; 112)(131.

The affix sequences I think are compatible for the language fall into three groups: 1) those sequences in diagnostic slot A which occur with all V regardless of sub-class combining with 2) all those optional and dependent affix sequences which are restricted to certain V sub-classes as these were described for Vt in tables 1, la, 2, 2a and for Vi in diagram? combining with 3) all the other possible combinations of affixes in the inventory that occur with V and are not listed as incompatible above or by sub-class. This last group may occur with all the permissible sequences implied in groups 1 and 2 and like group 1 may occur with all V.

In the diagnostic slot A and in the definition of V sub-classes some affix sequences were marked as optionally co-occurring with each other, but not all of the optional sequences were given. Some, but not all, of those not given will be given below and some will be repeated. Those that are not given can be checked by the formulas for affix co-occurences given above. In addition, those given below may not include all the sequences given illustrating bases and roots or in the tables. For these sequences see 14.1.1 and 14.2. Any affix sequence, then, given in 14.1.1 or 14.2 should be read with the incompatible and compatible rules given above.

With these compatible and incompatible rules in mind, the following

V sequences in appropriate sub-classes are given. To avoid tedious

repetition as many examples will be given as will illustrate a sequence occurrent in the corpus. If one sub-class may do this only one sub-class will be used, and if only one member of a sub-class may do this only one member will be used. However, it should be kept in mind, that although one sub-class is given illustrating a certain sequence of of affixes, if those affixes occurred in groups 1 and 3, then all V sub-classes may occur with this particular sequence although these classes are not exemplified here as occurring with that affix sequence. If a given affix sequence is not given, but is compatible by groups 1 and 3, then that is a sequence which is permissible in the corpus. Any examples of divisive affixes occurring in group 2 are naturally restricted to certain sub-classes, but when the divisive affix or affixes occur with affixes in groups 1 and 3 then all sub-classes occurring with that divisive affix may occur with the total affix sequence, although all the other sub-classes may not be exemplified.

Remember, that each one of these examples is governed by the rules for compatible sequences given above, i.e. although in a given example all the possible sequences, groups 1-3 above, do not occur, each example may be read with these groups in mind since in any example, all compatible affixes may occur in the orders given in the inventory, except for restrictions as to appropriate sub-class. Remember also that these examples are governed by the rules for incompatible sequences and so these examples should be read with these sequences

in mind and also the divisive affixes appropriate to a given sub-class.

For sequences of V with transformative affixes 40,321, 241.1, 243 and 250 see N section.

Examples from citation will be given when a particular sequence occurred there but not in text.

The formulas given before each set of examples will give all the occurrent suffix sequences for that set, but not all the particular prefix-suffix sequences. The prefix sequences will be shown as occurring with all suffix sequences although all of these possibilities did not occur in the corpus. However, if a given sequence is shown as occurring in the formulas and does not violate the rules for incompatible sequences given above, including divisive sequences, with particular sub-classes, then I judge that sequence will occur in some future corpus. This applies to suffixes also. In addition, there are some sequences in the formulas which are not shown to co-occur. These sequences are also to be interpreted as possible in some future corpus.

In the examples an underline in parentheses means that the sub-class immediately above is repeated. In the formulas, any two or more affixes in parentheses both occur with any affix to their immediate left or right. The order of presentation generally begins with all the combinations of a given suffix when that suffix occurred initially in a given suffix sequence.

14.3.1 The following are affix sequences with Vis.

in mind and also the divisive affixes appropriate to a given sub-class.

For sequences of V with transformative affixes 40, 321, 241.1, 243 and 250 see N section.

Examples from citation will be given when a particular sequence occurred there but not in text.

The formulas given before each set of examples will give all the occurrent suffix sequences for that set, but not all the particular prefix-suffix sequences. The prefix sequences will be shown as occurring with all suffix sequences although all of these possibilities did not occur in the corpus. However, if a given sequence is shown as occurring in the formulas and does not violate the rules for incompatible sequences given above, including divisive sequences, with particular sub-classes, then I judge that sequence will occur in some future corpus. This applies to suffixes also. In addition, there are some sequences in the formulas which are not shown to co-occur. These sequences are also to be interpreted as possible in some future corpus.

In the examples an underline in parentheses means that the sub-class immediately above is repeated. In the formulas, any two or more affixes in parenthese, both occur with any affix to their immediate left or right. The order of presentation generally begins with all the combinations of a given suffix when that suffix occurred initially in a given suffix sequence.

14.3.1 The following are affix sequences with Vis.

Sequences of prefixes which occurred without suffixes:

yú (Visl2lb2) It is 5J, pg. l; a-5:p (31-Visl2lal) I am not DWTl,
pg. l4; nyú-mə-wǐ: (21-32-Vis2lla) When you own it CA, pg. l;
nyî-tǐtît (21-Vis222) When it is smooth C, pg. l8; m-yú (32-Visl2lb2)
You are coming SR, pg. l9; nyî-m-v-yú: (21-32-54-Visl2lb2) When you
are coming PW, pg. l8; və-kwáð (53-Vis222) It's getting brown C,
pg. 2l; vi-yú (54-Visl2lb2) I am coming CA, pg. 9; cí-cimiyéw
(71.2-Visl122) He is getting it higher B, pg. 20; tə-mǐtəm-it, ə

(71.1-Visl22a) They straighten it HSL, pg. 5; tə-5p (84-Visl2lal)
It's not 4C, pg. 7.

The following are suffixes which occurred initially in sequences in which no prefixes occur:

$$192 \pm \begin{pmatrix} 211 \\ 234 \end{pmatrix}$$

yú-θi-k (Vis12lb2-192-211) It will take a while LS, pg. 9; ciyú-θə-m (__-192-234) They ll start in a little while BS, pg. 5; pí-θ (Vis2l2b-192) In a little while she died J3, pg. 1.

Sequences of prefixes which occurred without suffixes:

yú (Visl2lb2) It is 5J, pg. l; a-5:p (:1-Visl2lal) I am not DWTl,
pg. 14; nyú-mə-wǐ: (21-2-Vis2lla) When you own it CA, pg. l;
nyî-tǐtit (21-Vis222) When it is smooth C, pg. 18; m-yú (32-Visl2lb2)
You are coming SR, pg. 19; nyî-m-v-yú: (21-32-54-Visl2lb2) When you
are coming PW, pg. 18; və-kwáð (53-Vis222) It's getting brown C,
pg. 21; vi-yú (54-Visl2lb2) I am coming CA, pg. 9; cǐ-cimiyów
(71.2-Visl122) He is getting it higher B, pg. 20; tə-mǐtəm-itə
(71.1-Visl22a) They straighten it HSL, pg. 5; tə-ɔp (84-Visl2lal)
It's not 4C, pg. 7.

The following are suffixes which occurred initially in sequences in which no prefixes occur:

$$192 + \begin{pmatrix} 211 \\ 234 \end{pmatrix}$$

yú-θi-k (Visl2lb2-192-2ll) It will take a while LS, pg. 9; ciyú-θə-m (___-192-2)4) They ll start in a little while ES, pg. 5; pí-θ (Vis2l2b-192) In a little while she died J3, pg. 1.

$$161 \pm \begin{pmatrix} 211 \pm 222 \\ 234 \end{pmatrix}$$

θ-pit,-o-k (Visl121-161-211) He makes it hard 9C, pg. 3; hán-o (__-161) he makes it good PDLS, pg. 6; hán-o-m (__-161-234) they make it good then UJ, pg. 5; hán-o-k-yu (__-161-211-222) he is made to like it C, pg. 16.

hán-ol (Visll21-191) it seems good BS, pg. 29-30; wí-wo-k (Vis211b-191-211) he seems to be doing it like that C, pg. 15; tav-51-k-yu (Vis222-191-211-222) he seems well C, pg. 20.

182 occurred as initial suffix only in the sequence 32-182-222: m-yúvi-h-yú try it C, pg.31.

Sequences of prefixes + suffixes follow.

With 112 as an initial suffix with prefixes:

mə-smá:-m (32-Visl12a-112) you sleep CA, pg. 7; mí-yú-mi-m (32-Visl2lb2-112-234) after you come C, pg. 12; v-yú-ci-k-yu (54-___-112-141-211-222) those things are happening there B, pg. 6; v-yú:-mi-k-yu (54-___-112-211-222) it is happening there B, pg. 6; v-yú-m (54-___-112) it is happening there LS, pg. 9; va-qéci-m (32-Visl11-112) it is becoming small BS, pg. 29-30; to-qéci-m

0əpi; -o-k (Visl121-161-211) He makes it hard 9C, pg. ; hán-o (__-161) he makes it good PDLS, pg. 6; hán-o-m (__-161-234) they make it good then LaJ, pg. 5; hán-o-k-yu (__-161-211-222) he is made to like it C, pg. 16.

hán-ol (Visll21-191) it seems good BS, pg. 29-30; wi-wo-k (Vis211b-191-211) he seems to be doing it like that C, pg. 15; tav-51-k-yu (Vis222-191-211-222) he seems well C, pg. 20.

182 occurred as initial suffix only in the sequence 32-182-222: m-yúvi-h-yú try it C, pg.31.

Sequences of prefixes + suffixes follow.

With 112 as an initial suffix with prefixes:

ma-smá:-m (32-Visl12a-112) you sleep CA, pg. 7; míl-yúl-mi-m (32-Visl2lb2-112-234) after you come C, pg. 12; v-yúl-ci-k-yu (54-___-112-141-211-222) those things are happening there B, pg. 6; v-yúl-mi-k-yu (54-___-112-211-222) it is happening there B, pg. 6; v-yúl-m (54-___-112) it is happening there LS, pg. 9; val-qéci-m (32-Visl11-112) it is becoming small BS, pg. 29-20; to-qéci-m

(71.1-__-112) he is making it small CWT1, pg. 7; tə-5:-m (84-Vis212al-112) it isn't PW, pg. 7; və-háni-m-ɔl (53-Vis1121-112-191) it seems to be getting better PW, pg. 16.

Sequences with 112 as initial suffix with no prefixes:

$$+(112)+ \begin{pmatrix} 181 \\ 211+222 \\ (+141)-234 \\ 231 \end{pmatrix}$$

pí-m (Vis212b-112) She dies there LS, pg. 4; yú-m-k (Vis12lb2-112-211) it is there bC, pg. 1; cikpá-m-k-yu (Vis12lb1___-112-211-222) he is climbing there C, pg. 5; cikpá-m-?-yu (__-112-181-222) I am climbing there BS, pg. 29; nál-mə-m (Vis212al-112-234) when she dropped it there C, pg. 1; wí-m-0ɔ (Vis21lb-112-231) if he was like that BS, pg. 8-9; cikəli-m-ci-m (Vis212a2-112-141-234) when it flows 5J, pg. 8.

With 130 as initial suffix, only 54 occurred as a prefix with 132:

v-yú-i-m (54-Vis121b2-132-234) They are like that again PW, pg. 21.

Suffix sequences with 130 as initial suffix with no prefixes:

$$130 \pm \begin{pmatrix} 211 (\pm 122) (\pm 235) \\ 171 - 211 (\pm 222) \\ \pm 151 - (211) \\ (234) \\ 192 - 211 \end{pmatrix}$$

cikpá-m (Visl2lbl-Bl) he s beginning to climb C, pg. 5; yú-i-k
(Visl2lb2-Bl-2ll) it's beginning to happen 8C, pg. 5; yú-i-k-yu
(__-B2-2ll-222) it is happening again C, pg. 42; yú-i-ti-k

(__-132-151-211) I was there again LS, pg. 4; yú-i-0i-k (__-132-192-211) I came there again for awhile BS, pg. 5; yú-m-hî-k-yu (__-131-171-211-222) He will begin C, pg. 42; yú-i-k (__-132-211) it is happening again LS, pg. 17. yú-wo (__-13) they are doing it for you BS, pg. 26; yú:-nyi (__-134) it is also happening 5J, pg. 4-5; yú-nyi-m (__-134-234) I'm also coming PW, pg. 22; yú-nyi-k-yu (__-134-211-222) It is also happening C, pg. 42; yú-nyi-hî-kə (__-134-171-211) He will also come C, pg. 1. tí-m-k-yú-ny (Vis212al-131-211-222-235) He began to turn into a man C, pg. 64; ú-i (__-132) He sees it again C, pg. 10; ú-i-tə-m (__-132-151-234) When they saw it again B, pg. 26; swút-o-kí-nyə (__-13-211-235) She sang for him C, pg. 11; spó-nyi-k (Vis121a2-134-211) He also knows it.

With 140 as initial suffix with prefixes:

nyú-lwév-ci-nyi-k (21-Vis212c-141-201-211) When they marry 9J, pg.];
nyi-há·n-c-p-k (21-Vis1121-141-161-211) After they make it good 7C,
pg. 9; ma-hán-ca-tε (32-Vis1121-141-132) Don't be good C, pg. 51;
va-téwa-c-ŷ-m (54-Vis221-141-161-234) They make it bigger BS, pg. 20;
nyi-yú:-ci-m (21-Vis121b2-141-234) When those things happen LS,
pg. 19; nyi-yú-ci-k (21-___-141-211) When those things happen C, pg. 5;

m-yú-ci-nyə (32-___-141-235) You all were JJ, pg. 8; v-yú-cə (54-___-141) They are PW, pg. 1; ve-yú-ci-k (54-___-141-211)

They are LS, pg. 17; v-yú-cə-tɛ (54-___-141-232) They should be

LS, pg. 20; ve-yú-ci-m (54-___-141-234) They are LS, pg. 20;

a-5:p-cə (31-Vis12lal-141) We aren't BS, pg. 28; e-ú:m-ci-k

(31-___-141-211) We aren't BS, pg. 17; e-5:p-ci-yú-nyə (31-___-141-222-235) We didn't C, pg. 5; mə-yú-cə (32-___-141) you all don't JJ, pg. 8; ma-5p-ci-k-yû (32-___-141-211-222) you all don't JJ, pg. 9; tə-5:pi-ci (84-___-141) They don't C, pg. 1; tə-smá-cə (71.1-Vis122a-141) They dream it B, pg. 19; tə-smá-ci-k (71.1-Vis122a-141-211) They dream it B, pg. 19; tə-nmá;ki-ci-m (84-__-141-234) When they were turned loose SR, pg. 12; sə-vó-cə-k-yú-nyə (81-Vis212a1-141-211-222-235) They waited C, pg. 6.

With 141 as initial suffix with no prefixes. Included in this section are sequences with 241.1,.2, allomorphs of 141.

yú-ci (Visl2lb2-141) They are TS, pg. 17; yú-c-tə-m (__-141-151-234) They came BS, pg. 1; yi-ci-ti-k (__-141-151-211) They were 7C, pg. 7; y-i-ci-h-yu (__-141-171-222) We will be BS, pg. 17; yú-ci-0i-k (__-141-192-211) They were there awhile B, pg. 20; yú:-ci-k (__-141-211) They come BS, pg.3; yú-cə-k-yu (__-141-211-222) They are C, pg. 13; yú-ci-yu (-141-222) They come DWT1, pg. 5; yú-ca-kí-nya (__-141-211-235) They were SR, pg. 3 4; yú-ca-k-yú-nya (__-141-211-222-235) They were C, pg. 6; yú:ci-nyə (__-141-235) They were BS, pg. 22; yú-ci-θά (__-141-231) If they are PW, pg. 10; yimá-ci-h-nyi-k (Vis212al-141-171-201-211) When they will dance PDLS, pg. 6; siyátvu-c-5-k (___-141-161-211) They make it pointed 5C, pg. 6; ti-ci-ŋ-wi-m (___-141-182-222-234) You all turn into... B, pg. 11; maki-ci-m (__-141-234) When they left B, pg. 9; vələwi-ci-nyi-k (Vis211b-141-201-211) When they were the same SR, pg. 17; sp5-c-51 (Visl2la2-141-191) They seem to know it BS, pg. 14; v5:-ci-hi-k-yu (Visl22a-141-171-211-222) they will walk C, pg. 6; i-ci-03-m (Vis212a2-192-234) They talked awhile LS, pg. 2; i-ci-k-85 (__-141-201-23) if they ask C, pg. 20; sp5-ca-te (Visl2la2-141-232) They should know 13 J, pg. 9.

For purposes of contrast, 141, 233and 236 will be illustrated here to show interrogative past and present: yú-c-ε (Visl2lb2-141-233) Are they? C, pg. 1; yú-cu-wε (__-141-236) Were they? C, pg. 1;

yú-ci (Visl2lb2-141) They are TS, pg. 17; yú-c-tə-m (___-141-151-234) They came BS, pg. 1; yi-ci-ti-k (__-l41-151-211) They were 7C, pg. 7; y-i-ci-h-yu (__-141-171-222) We will be BS, pg. 17; yú-ci- θ i-k (__-141-192-211) They were there awhile B, pg. 20; yú:-ci-k (__-141-211) They come BS, pg.3; yú-cə-k-yu (___-141-211-222) They are C, pg. 1; yú-ci-yu (__-141-222) They come DWT1, pg. 5; yú-cə-ki-nyə (___-141-211-255) They were SR, pg. 3 4; yú-cə-k-yú-nyə (___-141-211-222-235) They were C, pg. 6; yú:ci-nyə (__-141-235) They were BS, pg. 22; yú-ci-θ5 (__-141-231) If they are PW, pg. 10; yimá-ci-h-nyi-k (Vis212al-141-171-201-211) When they will dance PDLS, pg. 6; siyátvu-c-3-k (___-141-161-211) They make it pointed 5C, pg. 6; ti-ci-n-xú-m (__-141-182-222-234) You all turn into... B, pg. ll; méki-ci-m (__-141-2"4) When they left B, pg. 9; vələwi-ci-nyi-k (Vis211b-141-201-211) When they were the same SR, pg. 17; sp5-c-51 (Visl2la2-141-191) They seem to know it BS, pg. 14; v5:-ci-hi-k-yu (Visl22a-141-171-211-222) they will walk C, pg. 6; i-ci-θə-m (Vis212a2-192-2¾) They talked awhile LS, pg. 2; i-ci-k-05 (___-141-201-21) if they ask C, pg. 20; sp5-ca-te (Visl2la2-141-2/2) They should know 13 J, pg. 9.

For purposes of contrast, 141, 233and 236 will be illustrated here to show interrogative past and present: yú-c-ε (Visl2lb2-141-23) Are they? C, pg. 1; yú-cu-wε (__-141-236) Were they C, pg. 1;

yú-+ high rising intenation (___) Is it? C, pg. 6; yú-we (__-236) Was it? C, pg. 6; té-we (Vis211-236) Were there many? C, pg. 7.

Sequences with 241.1 initial are;

$$\begin{pmatrix}
(\pm 131) - 211 - 222 \\
211(\pm 222 - 235)
\end{pmatrix}$$
241.1±
$$\begin{pmatrix}
182 \\
234
\end{pmatrix}$$

t-á:y-k-yu (Vis212c-24l.1-211-222) They are playing C,

pg. 8; t-áy-m-k-yu (___24l.1-13l-211-222) They began to

play C, pg. 3; t-áy-k-yú-nye (___24l.1-211-222-235) They

played C, pg. 1; kiky-á:y-ke (___24l.1-211) They are

strong 8C, pg. 9; kíli-á:y-ve (___24l.1) They are anxious

PW, pg. 2l; tem-á:y-n (___24l.1-182) You all are ambitious

5C, pg. 9; c-á:y-vi-m (___24l.1-234) All the water kept

pouring down B, pg. 18.

The only sequences with 241.2 initial were those in which this affix occurred alone and also in the sequence (Vis2l2b-241.2-161-211): 0ot-úi-ô-k They make holes 7C, pg. 7; p-úi (Vis2l2b-241.2) They die J3, pg. 6.

151 occurred as an initial suffix with prefixes in the following sequences:

nya-há·n-ti-k (21-Visl121-151-211) When I was good LS,
pg. 6; mə-wá-tə-m (32-Vis212al-151-234) When you were sitting there C, pg. 16; m-yú-ti-k (32-Visl21b2-151-211) You
were C, pg. 12; m-yú-t-63 (32-__-151-231) If you were
C, ps. 7; va-yú-ti-k (54-__-151-211) W were L3, sg. 7;

yú-+ high ricing intenation (___) Is it? C, pg. 6; yú-we (__-236) Was it? C, pg. 6; té-we (Vis211-236) Were there many? C, pg. 7.

Secuences with 241.1 initial are;

$$\begin{array}{c}
(\pm 131) - 211 - 222 \\
211(\pm 222 - 235) \\
182 \\
234
\end{array}$$

t-á:y-k-yu (Vis212c-241.1-211-222) They are playing C,
pg. 8; t-áy-m-k-yu (__-241.1-131-211-222) They began to
play C, pg. 3; t-áy-k-yú-nye (__-241.1-211-222-235) They
played C, pg. 1; kiky-á:y-ke (__-241.1-211) They are
strong 8C, pg. 9; kíli-á:y-ve (__-241.1) They are anxious
PW, pg. 2l; tem-á:y-n (__-241.1-182) You all are ambitious
5C, pg. 9; c-á:y-vi-m (__-241.1-234) All the water kept
pouring down B, pg. 18.

The only sequences with 241.2 initial were those in which this affix occurred alone and also in the sequence (Vis212b-241.2-161-211): 0ot-úi-ô-k They make holes 7C, pg. 7; p-úi (Vis212b-241.2) They die J3, pg. 6.

151 occurred as an initial suffix with prefixes in the following sequences:

nya-há·n-ti-k (21-Visl121-151-211) When I was good LS,
pg. 6; mə-wá-tə-m (32-Vis212a1-151-234) When you were sitting there C, pg. 16; m-yú-ti-k (32-Visl21b2-151-211) You
were C, pg. 12; m-yú-t-eð (32-___-151-231) If you were
C, pg. 7; va-yú-ti-k (54-__-151-211) Wo were L3, pg. 7;

ta-5:p-ti-k (84-Visl2lal-151-211) Before... SR, pg. 1; ta-5:-ti-m (84-___-151-234) Before... SR, pg. 5:

151 as an initial suffix with no prefixes:

wá-tem (Vis212al-151-234) He sat there LS, pg. 7; yú-t
(Vis12122-151) It was PDLS, pg. 5; yí-ti-k (__-151-211)
It was J3, pg. 4; yú-ti-k-yu (__-151-211-222) It was
C, pg. 18; yú-t-eo (__-151-231) If it was PW pg. 17.

Prefixes occurring with 171 when it is an initial suffix:

$$\pm \begin{pmatrix} 31\\ 32\\ 54 \end{pmatrix} \pm 171 \pm \begin{pmatrix} 211\\ (\pm 182) - 222 \end{pmatrix}$$

A-úm-hi-yu (31-Visl2lal-171-222) I won't CA, pg. 12;
mi-yí-h (32-Visl2lb2-171) You will be CA, pg. 7; mi-yúhi-n-yu (32-__-171-182-222) It will be you C, pg. 58;
va-yú-hi (54-__-171) I will be PW, pg. 23; va-yú-hi-k
(54-__-171-211) I will be CA, pg. 11.

171 as an initial suffix without prefixes:

$$171\pm \left\{ \begin{pmatrix} (181 \\ (\pm 211 \end{pmatrix} - 222 \\ 211 \end{pmatrix} \right\}$$

pi-h (Vis212b-171) They will die J3, Pg. 9; yú-hi-k

(Vis12lb2-171-211) It will be 8C, pg. 12; yú-hi-yu: (___/7/212) / f w// he OwTI /5. 7; y/-4/- ?-y ~

(___-171-181-222) I will be C, pg. 24; hwáti-hi-k-yu

(Vis222-171-211-222) It will be red 8C, pg. 4.

As initial suffix 181 occurred in the following sequences with prefixes:

ta-5:p-ti-k (84-Visl2lal-151-211) Before... SR, pg. 1; to-5:-ti-m (84-__-151-234) Before... SR, pg. 5:

151 as an initial suffix with no prefixes:

wá-tem (Vis212al-151-234) He sat there LS, pg. 7; yú-t (Vis12122-151) It was PDLS, pg. 5; yí-ti-k (__-151-211) It was J3, ps. 4; yú-ti-k-yu (__-151-211-222) It was C, pg. 18; yú-t-00 (__-151-231) If it was PW pg. 17.

Prefixes occurring with 171 when it is an initial suffix:

$$\pm \begin{pmatrix} 31\\ 32\\ 54 \end{pmatrix} \pm 171 \pm \begin{pmatrix} 211\\ (\pm 182) - 222 \end{pmatrix}$$

a-úm-hi-yu (31-Visl2lal-171-222) I won't CA, pg. 12;
mi-yí-h (32-Visl2lb2-171) You will be CA, pg. 7; mi-yúhi-r-yu (32-__-171-182-222) It will be you C, pg. 58;
va-yú-hi (54-__-171) I will be PW, pg. 23; va-yú-hi-k
(54-__-171-211) I will be CA, pg. 11.

171 as an initial suffix without prefixes:

$$171\pm \left\{ \begin{pmatrix} (181 \\ (\pm 211) \end{pmatrix} - 222 \right\}$$

As initial suffix 181 occurred in the following sequences with prefixes:

$$\pm \begin{pmatrix} 31 \\ 54 \\ 81 \end{pmatrix} = (\pm 181 \pm (222))$$

?-spó-?-yu (31-Visl2la2-181-222) I know it C, pg. 3; se-vó-?-yu (81-Vis2l2a1-181-222) I wait C, pg. 3; væyú-i (54-Visl2lb2-181) I come PW, pg. 22.

181 without prefixes:

ú-i (Vis212al-181) I see it LS, pg. 9; u-ú-i (__-242-181) I always see it PW, pg. 5; ú-i-6ê-m (__-181-192-234) I saw it awhile BS, pg. 23; wayó-?-0i-k (__-181-192-211) I lived there awhile 16, pg. 3; wú-?-k-yu (__-181-211-222) I lived there C, pg. 9; yú-i-k (Vis121b2-181-211) I am coming CA, pg. 3; yú-?-yu (__-181-222) I am C, pg. 16; vó-?-nyu (Vis122a-181-235) I walked C, pg. 14.

201 as initial suffix with prefixes:

$$\frac{+(11)}{(53)}$$
 \pm 201-234

vi-mwέ-nyi-m (53-Vis221-201-234) When it gets warmer DWT2, pg. 4; wε-yú·nyi-m (11-Visl21b2-201-234) When he left C, pg. 11.

201 without prefixes only occurred in the following sequence: mémá-nyi-m (Vis212al-201-234) When it's cooked 90, pg. 6.

$$\pm \begin{pmatrix} 31 \\ 54 \\ 81 \end{pmatrix} \qquad (\pm 181 \pm (222))$$

?-spó-?-yu (31-Visl2la2-181-222) I know it C, pg. 3; sə-vó-?-yu (81-Vis2l2al-181-222) I wait C, pg. 3; vær yú-i (54-Visl2lb2-181) I come PW, pg. 22.

181 without prefixes:

ú-i (Vic212a1-131) I see it LS, pg. 9; u-ú-i (__-242-151) I always see it PW, pg. 5; ú-i-0ê-m (__-181-192-234) I saw it awhile BS, pg. 23; wayó-?-0i-k (__-181-192-211) I lived there awhile 16, pg. 3; wá-?-k-yu (__-181-211-222) I lived there C, pg. 9; yú-i-k (Vis121b2-181-211) I am coming CA, pg. 3; yú-?-yu (__-181-222) I am C, pg. 16; vú-?-nyu (Vis122a-181-235) I walked C, pg. 14.

201 as initial suffix with prefixes:

$$\pm (11)$$
 $\pm 201-234$

vi-mwέ-nyi-m (53-Vis221-201-234) When it gets warmer DWT2, pg. 4; wε-yú·nyi-m (11-Visl21b2-201-234) When he left C, pg. 11.

201 without prefixes only occurred in the following sequence: mémá-nyi-m (Vis212al-201-234) When it's cooked 90, pg. 6.

211 occurred as an initial suffix with the following prefixes:

nyu-ú-k (21-Vis212a1-211) When he sees it 5J, pg. 6;

nyî-m-ú-k-00 (21-32-___-211-231) If you see it C, pg. 10;

m-yú-k (32-___-211) You lie down C, pg. 30; so-vó-k

(81-__-211) He waits C, pg. 23. so-vó-k-yu (81-__-211-222) He waits C, pg. 23; so-vó-kí-nye (81-__-211-235) He waited C, pg. 23; vo-té-k-yu (53-Vis211-211-222) It's getting big C, pg. 21; mí-ci-máni-k (32-71.2-Vis122b2-211)

You fall down them LS, pg. 19; va-yú-k (54-Vis121b2-211)

We are LS, pg. 7; m-yí-k-00 (32-___-211-231) If you are

C, pg. 24; m-yú-ke-m (32-___-211-234) You come SR, pg. 19;

zo-rí-k (3f-vis/2/a/-1/2) ke /sn-t C, fi-s-f

to-s-pi-k (3f-vis/2/a/-1/2) It isn-t C, pg. 5; to-ó-p-k-yú-nye (84-__-211-222) It isn-t C, pg. 5.

Sequences of 211 without prefixes:

hán-kə (Visl121-211) It is good PW, pg. 18; é·l-k-yu (Vis212al-211-222) It is flowing B, pg. 17; tóp-k-yú-we (__-211-222-236) Did he go down? C, pg. 12; wá-kí-nye (__-211-235) He was sitting C, pg. 16; məkwí·l-kə-m

211 occurred as an initial suffix with the following profixes:

nyu-ú-k (21-Vis212al-211) When he sees it 5J, pg. 6;

nyî-m-ú-k-00 (21-32-___-211-231) If you see it C, pg. 10;

m-yá-k (32-___-211) You lie down C, pg. 30; se-vó-k

(81-___-211) He waits C, pg. 23. se-vó-k-yu (81-___-211-232) He waits C, pg. 23; se-vó-ki-nye (81-___-211-235) He waited C, pg. 23; ve-té-k-yu (53-Vis211-211-222) It's getting big C, pg. 21; mí-ci-máni-k (32-71.2-Vis122b2-211)

You fall down them L3, pg. 19; va-yú-k (54-Vis121b2-211)

We are L3, pg. 7; m-yí-k-00 (32-___-211-231) If you are

C, pg. 2A; m-yú-ke-m (32-___-211-234) You come SR, pg. 19;

ze-Yri-k (jf-visi2ia/~1/1) ke /in-t C, ff-visi2ia to C, pg. 5; to-ó:p-k-yú-nyo (84-___-211-222-235) He didn't C, pg. 5.

Sequences of 211 without prefixes:

hán-ke (Visl121-211) It is good PW, pg. 18; é·l-k-yu (Vis212a1-211-222) It is flowing B, eg. 17; tóp-k-yú-ws (__-211-222-236) Did he go down? C, pg. 12; wá-kí-nye (__-211-235) He was sitting C, pg. 16; mekwí·l-ke-m

222 occurred as an initial suffix with prefixes only in the following sequence: m-yú-yû-m (32-Visl2lb2-222-234)

You are C, pg. 7. 222 occurred in the following sequences without prefixes: 222±235. úm-yu (Visl2lal-222) It isn't 4C, pg. 8; yú-yú-nye (Visl2lb2-222-235) I was there C, pg. 7.

231 as an initial suffix occurred without prefixes:
myúc-00 (Vis212a1-231) I used to LS, pg. 15; nów-0
(Vis222-231) If it's heavy C, pg. 4.

232 as an initial suffix did not occur with suffixes but occurred with the following prefixes:

$$\pm$$
 $\begin{pmatrix} 32 \\ 54 \end{pmatrix}$ \pm 232

ma-cikpá-t (32-Visl2lbl-232) Don't climb C, pg. 33; v-í-tæ (54-Vis2l2a2-232) Don't say it LS, pg. 20; yí-t (Visl2lb2-232) But... CA, pg. 2.

234 as initial suffix did not occur with other suffixes with or without prefixes:

$$\pm \left(\frac{\pm 21 \pm (32)}{(54)} \pm 234\right)$$

yú-m (Visl2lb2-234) When it happens 13J, pg. 2; nyi-yú-m (21-__-234) When she is 8C, pg. 10; nyi-m-yú-m (21-32-_-234) When you come C, pg. 8; nya-v-úm (21-54-__-234)

When it happens 80, pg. 12.

235 did not occur with any suffixes as initial suffix with or without prefixes:

$$\pm (31) \pm 235$$

yí:-nye (Visl2lb2-235) It was SR, pg. 10; i-spć-nye (31-Visl2lal-235) We knew it DWTl, pg. 6; m-í-nye (32-Vis2l2a2-235) You said it J3, pg. 4.

14.3.1.1 The following are sequences of initial suffix status-quos with inflectional prefixes. No divisive affixes occur here:

Sequences with 101 initial

tí-vi-k (Vis212al-101-211) She is pregnant 5J, pg. 12. ú-vi-m (__-101-234) It is clear now B, pg. 5; ú:vi-h-?-yu When it happens 80, pg. 12.

235 did not occur with any suffixes as initial suffix with or without prefixes:

$$\pm (31) \pm (32) \pm 235$$

yí:-nye (Visl2lb2-235) It was SR, pg. 10; i-spó-nye (31-Visl2lal-235) We knew it DWTl, pg. 6; m-í-nye (32-Vis2l2a2-235) You said it J3, pg. 4.

14.3.1.1 The following are sequences of initial suffix status-quos with inflectional prefixes. No divisive affixes occur here:

Sequences with 101 initial

tí-vi-k (Vis212al-101-211) She is pregnant 5J, pg. 12. ú-vi-m (__-101-234) It is clear now B, pg. 5; ú.vi-h-?-yu (__-101-171-181-222) I will be clear C, pg. 8; nyi-m-ti:-v (21-32-_-101) When you are pregnant 5J, pg. 1.

Sequences with 102 initial: hwat-ti-k (Vis212al-102-211) She menstruated 8C, pg. 1.

Sequences with Ill initial: v5-k (Visl22a-III) He returns 4C, pg. 7; v5-ki-hí-k-yu (__-III-171-211-222) He will return C, pg. 9; v5-ki-k (__-III-211) I return 1C, pg. 3; v5-ki-yu (__-III-222) I returned DWTl, pg. 19; v5-ki-nyə (__-III-235) I returned 1C, pg. 3; v5-ki-m (__-III-234) I returned them LS, pg. 9; nya-v5-ki-m (21-__-III-234) When I return C, pg. 14; v6-ki-k-yu (Vis212al-III-211-222) She comes home C, pg. 16; v6-ki-k-yú-nyə (__-III-211-222-235) She came home C, pg. 16; v6-k-yú-ny (__-III-222-235) She came home C, pg. 16; nya-v6-kə (21-__-III) When he comes home B, pg. 25-26.

With 112 as initial suffix: i-yá:-m-ci-m (31-Vis 212a3-112-141-234)

We are going BS, pg. 28; mi-yá·-m (32-__-112) You go 4C, pg. 6;

mi-yá·-m-kə (32-__-112-211) You go C, pg. 10; mi-yá·-mi-ŋ-yû

(32-__-112-182-222) You go C, pg. 45; mi-yá·-mə-m (32-__-112-234) When you go C, pg.); mi-yá·-mə-tɛ (32-__-112-232) Don't go

C, pg. 4; mi-yá·-m-yu (32-__-112-222) You go C, pg. 47; mi-yá·-m-nyu (32-__-112-235) You did go C, pg. 47; mi-yá·-m-wɛ (32-__-112-236) Did you go? C, pg. 17; nya-yá:-m (21-__-112) When I'm going CA, pg. 9; nya-yá-mə-m (21-__-112-234) When I go CA,

pg. 4-5; nyi-m-yá·m (21-32-__-112) When you go C, pg. 1;

nyi-mi-yá·mə-m (21-32-__-112-231) When you go C, pg. 6;

nyi-m-yá-m-k-θɔ (21-32-__-112-211-231) If you go C, pg. 6;

(__-101-171-181-222) I will be clear C, pg. 8; nyi-m-ti:-v (21-32- -101) When you are pregnant 5J, pg. 1.

Sequences with 102 initial: hwát-ti-k (Vis212al-102-211) She menstruated 8C, pg. 1.

Sequences with Ill initial: v5-k (Visl22a-Ill) He returns 4C, pg. 7; v5-ki-hi-k-yu (__-Ill-171-211-222) He will return C, pg. 9; v5-ki-k (__-Ill-21l) I return IC, pg.); v5-ki-yu (__-Ill-222) I returned DWTl, pg. 19; v5-ki-nyə (__-Ill-235) I returned IC, pg.); v5-ki-m (__-Ill-24) I returned them LS, pg. 9; nya-v5-ki-m (21-__-Ill-234) When I return C, pg. 14; vá-ki-k-yu (Vis212al-111-211-222) She comes home C, pg. 16; vá-ki-k-yú-nyə (__-Ill-211-222-235) She came home C, pg. 16; vá-k-yú-ny (__-Ill-222-235) She came home C, pg. 16; nya-vá-kə (21-__-Ill) When he comes home B, pg. 25-26.

With 112 as initial suffix: i-yá:-m-ci-m (31-Vis212a3-112-141-234)

We are going BS, pg. 28; mi-yá·-m (32-___-112) You go 4C, pg. 6;

mi-yá·-m-kə (32-___-112-211) You go C, pg. 10; mi-yá·-mi-ŋ-yù

(32-___-112-182-222) You go C, pg. 45; mi-yá·-mə-m (/2-___-112-234) When you go C, pg. 3; mi-yá·-mə-tɛ (32-___-112-232) Don't go

C, pg. 4; mi-yá·-m-yu ()2-___-112-222) You go C, pg. 47; mi-yá·-m-nyu ()2-___-112-235) You did go C, pg. 47; mi-yá·-m-wɛ (32-__-112-236) Did you go? C, pg. 17; nya-yá:-m (21-__-112) When I'm going CA, pg. 9; nya-yá-mə-m (21-__-112-234) When I go CA,

pg. 4-5; nyi-m-yá·m (21-32-__-112) When you go C, pg. 6;

nyi-m-yá·mə-m (21-22-__-112-231) If you go C, pg. 6;

nyi-m-yá-m-k-θɔ (21-32-__-112-231) If I come home C, pg. 11;

yá.-m (Vis212a3-112) He goes 5C, pg. 5; yá:-m-nyə (___-112-134) I also go C, pg. 5; yά:mi-n-k-θο (__-112-134-211-231) If he also goes C, pg. 12; yá:-m-cə (__-112-141) They go BS, pg. 31; yá:-m-ci-k-yú (__-112-141-211-222) They go C, pg. 14; yá:-m-ci-kə (__-112-141-211) They go BS, pg. 32; y6.-ma-hi (__-112-171) She will go C, pg. 9; yá.-m-hí-k-yu (__-112-171-211-222) He will go C, pg. 12; yá-m-5-k-yu (__-112-161-211-222) He makes him go C, pg. 62; yá-m-5-ki-myə (__-112-161-211-235) He made him go C, pg. 12; yd-m-7-yu (___-112-181-222) I go C, pg.3; yd-mi-k (___-112-211) he goes CA, pg. 2; yá-mi-k-yu (___-112-211-222) He goes C, pg. 46; yá-m-kí-nyə (__-112-211-235) He went C, pg. 2; yá-m-k-yú-nyə (___-112-211-222-235) He went C, pg. 2; yá:-mə-θi-k (__-112-192-211) I go for awhile CA, pg. 10; yd-m-yu (__-112-222) He goes C, pg. 6; yá·-mi--myə (___-112-235) I went C, pg. 14; spó-m-cə-ki-nyə (Visl2la2-112-141-211-235) They remembered C, pg. 19; vó-mi-m (Visl22a-112-234) I returned LS, pg. 9; vá:-m-ci-m (Vis212al-112-141-234) I come home LS, pg. 5.

14.3.1.2 Sequences of prefix and status-quo affixes follow. For others see Vi sub-classes Section 14.2.2-14.3:

nyi-m-vi-yá-m (21-32-62-Visl22bl-112) When you run C, pg. 5; nyi-vi-yá-m (21-62-__-112) When he runs C, pg. 17; nyi-vi-yá-mk-θο (21-62-__-112-231) If he runs C, pg. 47; mi-vi-yá-m (32-62-__-112) You run C, pg. 14; mi-vi-yá-m-k-θο (32-62-__-112-211-231) If you run C, pg. 7; vi-yá-m (62-__-112) It runs CA, pg. 1; yá·-m (Vis212a3-112) He goes 5C, pg. 5; yá:-m-nyə (___-112-134) I also go C, pg. 5; yá:mi-n-k-θο (__-112-134-211-231) If he also goes C, pg. 12; yd:-m-cə (___-112-141) They go BS, pg. 31; yá:-m-ci-k-yú (___-112-141-211-222) They go C, pg. 14; yá:-m-ci-kə (___-112-141-211) They go BS, pg. 2; y6.-ma-hi (___-112-171) She will go C, pg. 9; yá.-m-hí-k-yu (___-112-171-211-222) He will go C, pg. 12; yá-m-5-k-yu (___-112-161-211-222) He makes him go C, pg. 62; yd-m-p-ki-myə (___-112-161-211-235) He made him go C, pg. 12; yd-m-7-yu (___-112-181-222) I go C, pg. 3; yd-mi-k (__-112-211) he goes CA, pg. 2; yá-mi-k-yu (__-112-211-222) He goes C, pg. 46; yá-m-ki-nyə (__-112-211-235) He went C, pg. 2; yá-m-k-yú-nyə (___-112-211-222-235) He went C, pg. 2; yá:-mə-θi-k (__-112-192-211) I go for awhile CA, pg. 10; yd-m-yu (__-112-222) He goes C, pg. 6; yá-mi-nyə (___-112-235) I went C, pg. 14; spó-m-cə-ki-nyə (Visl2la2-112-141-211-235) They remembered C, pg. 19; vó-mi-m (Visl22a-112-234) I returned LS, pg. 9; vá:-m-ci-m (Vis212a1-112-141-234) I come home LS, pg. 5.

14.3.1.2 Sequences of prefix and status-quo affixes follow. For others see Vi sub-classes Section 14.2.2-14.3:

nyi-m-vi-yá-m (21-32-62-Vis122bl-112) When you run C, pg. 5; nyi-vi-yá-m (21-62-__-112) When he runs C, pg. 17; nyi-vi-yá-mk-θο (21-62-__-112-211-231) If he runs C, pg. 47; mi-vi-yá-m (32-62-__-112) You run C, pg. 14; mi-vi-yá·-m-k-θο (32-62-__-112-211-231) If you run C, pg. 7; vi-yá·-m (62-__-112) It runs CA, pg. 1; vi-yá-m-cə (62-___-112-141) They run C, pg. 6; vi-yá-m-ci-yû (62-___-112-222) They run C, pg. 19; vi-yá-m-k (62-___-112-211)

He runs C, pg. 19; vi-yá:-m-k-yu (62-___-112-211-222) He runs

C, pg. 56; vi-yá-m-k-yú-nyə (62-___-112-211-222-235) He was running C, pg. 6; vi-yá-m-yú-nyə (62-___-112-222-235) I ran C, pg. 15.

14.3.1.3 Following are sequences of prefix divisives with suffix status-quo affixes as they occurred initially in a suffix sequence:

Sequences of prefix divisives combined with prefix status-quos with an initial status-quo suffix:

$$71.2 \pm 62$$
 $\pm \{ (102) + 161 \}$

14.3.1.4 Sequences of prefix status-quos and suffix divisives follow:

$$(\pm 22)-84 \pm (121) \pm (\pm 22)-84 \pm (121) \pm (\pm 221) \pm (\pm 235)$$

$$(\pm 21)-222(\pm 236)$$

$$211-231$$

$$182-222$$

$$234$$

tə-ɔ-v (84-Visl2lal-121) It isn't C, pg. 6; tə-ɔ-v-ti-k (84-__-121-151-211) Before... C, pg. 12; tə-u-mɔ-m (84-__-135-234) I don't think so 5J, pg. 2; tə-ɔ-v-k-yu-nyə (84-__-121-211-222-235) He didn't C, pg. 15; tə-ɔ-v-ki-nyə (84-__-121-211-235) He didn't C, pg. 21; tə-ɔ-v-k-vu-və (84-__-121-211-231) If I can't C, pg. 40; tə-ɔ-v-k-yu-wə (84-__-121-211-222-236) Wasn't it? C, pg. 0; tə-ɔ-v-yu-wə (84-__-121-222-236) Wasn't it? C, pg. 40; mi-tə-ɔ-vi-ŋ-yu (22-84-__-121-182-222) Aren't you C, pg. 28.

A sequence in which prefix status-quo and prefix divisives co-occur: tééta-ó-p-ci-ô-k (71.1-84-Visl2lal-141-161-211) They don't make it 8C, pg. 10.

A sequence in which a prefix divisive and suffix divisive occurred: ci-yú-v (71.2-Visl2lb2-121) They are doing it B, pg. 12.

14.3.1.5 Sequences with divisive suffixes occurring with and without status-quo affixes with inflectional prefixes with and without status-quo prefixes:

$$+21+62$$
 $+91+$ $(110 (+211 (+222))+234)$

vi-ya.-c-mi (62-Visl22bl-91-112) They run B, pg. 1-2; v5:-ci-m (Visl22a-91-112) They go home PDLS, pg. 7; v5-c-mi-m

$$71.2 \pm 62$$
 $\pm (102)$ ± 161

cí-vi-yá-m (71.2-62-Vis122bl-112) We run it CA, pg. 1; cí-vi-yá-t,-> (71.2-62-___-102-161) It blew it away C, pg. 62.

14.3.1.4 Sequences of prefix status-quos and suffix divisives follow:

equences of prefix status-quos and suffix divisives follows:
$$\frac{+(151-211)}{211(+222)(+235)}$$

$$\frac{(+211)-222(+236)}{211-231}$$

$$182-222$$

$$234$$

tə-5-v (84-Visl2lal-121) It isn't C, pg. 6; tə-5-v-ti-k (84-__-121-151-211) Before... C, pg. 12; tə-ú-mɔ-m (84-___-135-234) I don't think so 5J, pg. 2; tə-5-v-k-yú-nyə (84-___-121-211-222-235) He didn't C, pg. 15; ta-5-v-ki-nya (84-__-121-211-235) He didn't C, pg. 21; tə-5-vi-k-95 (84-__-121-211-231) If I can't C, pg. 40; $t_{\theta}-5-v-k-y_{\theta}-w_{\epsilon}$ (84-___-121-211-222-236) Wasn t it? C, pg. 0; tə-5-v-yú-wε (84-___-121-222-2)6) Wasn't it? C, pg. 40; mi-tə-5-viŋ-yu (22-84-___-121-182-222) Arent you C, pg. 28.

A sequence in which prefix status-quo and prefix divisives co-occur: té ta-5.p-ci-5-k (71.1-84-Visl2lal-141-161-211) They don t make it 8C, pg. 10.

A sequence in which a prefix divisive and suffix divisive occurred: ci-vú-v (71.2-Visl2lb2-121) They are doing it B, pg. 12.

Sequences with divisive suffixes occurring with and without status-quo affixes with inflectional prefixes with and without statusquo prefixes:

$$+21+62$$
 $+91+$ $110 (+211 (+222))+234$

vi-yá.-c-mi (62-Vis122b1-91-112) They run B, pg. 1-2; v5:-ci-m (Visl22a-91-112) They go home PDLS, pg. 7; vó-c-mi-m

With 13 6 as suffix divisive:

$$\pm 21\pm$$
 $(\pm 136\pm (211-222))$

yú-l (Visl2lb2-136) He is in there LS, pg. 12; yú-l-k-yu (__-136-211-222) It is in there C, pg. 5; nyi-vá-l (21-Vis212al-136) When he arrives in here 4C, pg. 2.

With 135 as suffix divisive:

$$\pm 21$$
 $\pm 1^{35} \pm$ (141) (181) (234)

yú-mo (Vis121b2-135) I think so BS, pg. 6; yú-mo-y (__-135-181)

I think so 5J, pg. 9; i-mo-c (__-155-141) They think so LS, pg. 21;
n-yi-mo (21-__-135) When I think so LS, pg. 14; i-mô-m (Vis27ia-135-234) I think they said it 5C, pg. 2.

With 121 as divisive suffix:

ú:lu-v (Vis211b-121) They rode PW, pg. 2; kuwé·-vi-m (__-121-234)

It is deep BS, pg. 4; kwéw-vi-nye (__-121-235) We were talking C,

pg. 10; vélewí:-v-o-k (__-121-161-211) He made it the same 9C, pg. 2;

céw-vi-k-yú (__-121-211-222) They fight C, pg. 9; nyi-vúl-ve-m

(____-91-112-234) Then they went home 4C, pg. 7; v5:-ci-ki-k
(____-91-111-211) They return B, pg. 4; yú-ci-n-k (Visl21b2-91134-211) They also are BWT2, pg. 5; yú-c-mi-k-yu (Vis212a391-112-211-222) They go C, pg. 46; nyi-yú:-c-mi (21-___-91-112)
When we go BS, pg. 11.

With 13 6 as suffix divisive:

$$\pm 21\pm \qquad \qquad \pm 136\pm (211-222)$$

yú-l (Visl2lb2-136) He is in there LS, pg. 12; yú-l-k-yu (__-136-211-222) It is in there C, pg. 5; nyi-vá-l (21-Vis2l2al-136) When he arrives in here 4C, pg. 2.

With 135 as suffix divisive:

$$\begin{array}{ccc}
 & & (141) \\
 +21 & +135 + & (181) \\
 & & (234)
\end{array}$$

yú-mo (Visl2lb2-lb5) I think so BS, pg. 6; yú-mo-y (__-lb5-l8l)

I think so 5J, pg. 9; i-mo-c (__-lb5-l4l) They think so LS, pg. 2l;

n-yi-mo (2l-__-lb5) When I think so LS, pg. 14; i-mo-m (Visl2la
lb5-234) I think they said it 5C, pg. 2.

With 121 as divisive suffix:

ú:lu-v (Vis2llb-12l) They rode PW, pg. 2; kuwé·-vi-m (__-12l-234)

It is deep BS, pg. 4; kwéw-vi-nye (__-12l-235) We were talking C,

pg. 10; vélewí:-v-o-k (__-12l-16l-21l) He made it the same 9C, pg. 2;

céw-vi-k-yú (__-12l-21l-222) They fight C, pg. 9; nyi-vúl-ve-m

(21-___-121-234) When he rides C, pg. 19; məsé-vi-k (__-121-211)

It's frightening C, pg.; sp5-vi-hi-k-yu (Vis121a2-121-171-211-222)

He will know it C, pg. 46; nyi-cikpti-v-ci-k (21-Vis121b1-121-141-211) When they climb C, pg. 19; yú-v-0> (Vis121b2-121-231) I used to LS, pg. 15; the vertical content of the content of t

Sequences of two suffix divisives: y\(\frac{1}{2}\)-cu-v (Visl2lb2-91-121)

They are LS, pg. 18; \(\frac{1}{2}\)-v-o (Visl2lal-121-135) I don't think there is any DWTl, pg. 6.

14.3.2 Sequences of inflectional, divisive and formative affixes with roots follow: For other affix combinations with Vir see Section 14.2.1-14.3:

$$\pm 11 \pm (21) \pm (51) \pm (51) \pm (51) \pm (51)$$

mô-v-s-kwi-k (32-61-81-Vir222-211) You are idling HSL, pg. 13;

s-kwi-ci-k (81-__-141-211) They stand 5J, pg. 8; s-kwi-k-yú-nyə

(81-__-211-222-235) He was standing C, pg. 5; s-kwi-?-nyə (81-__-181-235) I stood there C, pg. 15; nyi-s-kwi-m (21-81-__-234)

When it s standing there C, pg. 60; ci-pá-m (51-Vir221-112) I came out 1C, pg. 4; nyi-c-pá-m (21-51-__-112) When I came out 1C, pg. 3;

wê-n-ci-pá-m (11-21-51-__-112) When I come out HSL, pg. 4; kə-jti-v (11-Vir21-121), fix vir the case LS fg. 6; kə-jti-v (21-Vir21-121), fix vir the case LS fg. 6; kə-jti-v (61-__-121-235) It was on the edge SR, pg. 12.

14.4 The following are affix sequences with Vts.

(21-___-121-2)4) When he rides C, pg. 19; məsé-vi-k (___-121-211)

It s frightening C, pg.; spó-vi-hi-k-yu (Visl2la2-121-171-211-222)

He will know it C, pg. 46; nyi-cikpá: -v-ci-k (21-Visl2lb1-121-141-211) When they climb C, pg. 19; yú-v-00 (Visl2lb2-121-231) I used to LS, pg. 15; 05.w-v-ti-k (Vis221-121-151-211) She gave birth LS, pg. 2; 05w-v-co-h-nyi-k (___-121-141-171-201-211) When they will have the baby 5J, pg. 7; mə-té-v (32-___-121) You get a lot 12J, pg. 2.

Sequences of two suffix divisives: yd-cu-v (Visl2lb2-91-121)
They are LS, pg. 18; ú-v-o (Visl2lal-121-135) I don't think there is any DWT1, pg. 6.

14.3.2 Sequences of inflectional, divisive and formative affixes with roots follow: For other affix combinations with Vir see Section 14.2.1-14.3:

$$\pm 11 \pm (21) \pm (51) = \pm (51)$$

14.4 The following are affix sequences with Vts.

14.4.1 Combinations of inflectional prefixes and suffixes follow.

The only prefixes that occurred without any suffixes were 21, 32:

nya-qi (21-Vtsl3) When they are ripe 6C, p. 2; m-wi (32-Vts221b)

We do it 8C, p. 5.

With Ill as a non-status quo affix as initial suffix: lll-141+234:
y5-ki-cî-m (Vtsl2l-111-141-234) They get it then HSL, p. 9;
δ:-ki-cθ (__-lll-14l) They jail me CA, p. ll.

With 112 as a non-status-quo initial suffix:

m-y5-m (32-Vtsl2l-112) You get it B, p.3; y5-m-c-5-k (__-112-141-161-211) They get us there DWTl, p. 17; səhá:-m-cî-m (Vtsl1la)2-112-141-234) They hang then 13J, p. 2; cuw5-mi-k (Vtsl22b-112-211) She put it there 7C, p. 9; wi-mə (Vts22lb-112) I did it B, p. 3.

Sequences with 130 and 160 as initial suffixes with prefixes:

wi-m (Vts22lb-131) He is beginning to do it C, p. 44; mə-wi-m

(32-__-131) You begin to do it C, p. 44; mə-wi-m-cə (32-_-131-141) You all begin to do it C, p. 44; wi-m-ci (__-131-141) Let's

begin to do it C, pg. 40; wi-m-ci-m (__-Bl-141-234) They begin to do it then 12J, pg. 2; wi-m-ci-k-wi (__-B1-141-211-221) They started C, pg. 1; wi-m-ci-k (__-131-141-211) they begin it HSPD, pg. 3-4; wi-mca-k-wi-ny (__-131-141-211-221-235) They began to do it C, pg.3; wim-hi-wi (__-131-171-221) He will begin C, pg. 49; wi-m-hi-k-wi (__-131-171-211-221) He will begin it 9J, pg.3; mə-wi-cə-hi-k-wi (2-__-131-141-171-211-221) You all will begin C, pg. 46; mə-wi-m-ci-hi-wi (32-_-131-141-171-221) You all will begin C, pg. 46; wi-mi-k (__-131-211) They begin it 7C, pg. 2; wf-m-k-wi (__-131-211-221) He's beginning to di it C, pg. 40; wi-m-te (__-131-232) Don't begin C, pg. 40; y5-y-k (Vtsl2l-l32-2ll) She gets it again 9C, pg. 5; wi-wo (Vts22lb-133) They do it for her J3, pg. 9; wf-wo-m (__-133-234) I do it for someone BS, pg.]; wi-wo-k (__-133-211) He did it fir him BS, pg,); wi-wo-?-wi (__-133-181-221) I 11 do it for him C, pg. 9; wi-wo-kwi-nyə (__-133-211-221-235) I did it for him C, pg. 10; wi-wo-cək-wi-nyə (__-133-141-211-221-235) They did it for him C, pg. 6; nyawi-wo-ci-k-wi-nye (21-__-133-141-211-221-235) They did it for him C, pg. 8; wi-wo-hi-k-wi (__-133-171-211-221) He will do it for you C, pg. 10; wi-wo-ce (_B3-141) They do it for him BS, pg. 8; mé-w-ci-m (Vtsl -133-141-234) They provide food for them J3, pg. 11; mé-w-ci-k (-13)-141-211) They provide food for them 9J, pg. 4; má-w-ci (-13-141) They provide food for them 12J, pg. 3; nyi-kav-b-wi (21-Vts14-133-221) When she cooked it for me C, pg. 16; wi-nya-ha-k-wi (Vts22lb-134-171-211-221) He ll also do it C, pg. 7; m6.-nyə (Vts3-134) I also eat C, pg. 4; má·-nyu-wi (__-134-211) I also eat C, pg. 18; mán-wi-nyə (__-134-211-235) I also ate C, pg.3; mé-w (__-161) He makes him eat it J3, pg. 12; év-o-m (Vts14-161-234) He makes them listen 9J, pg. 1-2;

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begin to do it C, pg. 40; wi-m-ci-m (__-131-141-234) They begin to do it then 12J, pg. 2; wi-m-ci-k-wi (__-131-141-211-22i) They started C, pg. 1; wi-m-ci-k (__-131-141-211) they begin it HSPD, pg. 3-4; wi-mca-k-wi-ny (__-131-141-211-221-235) They began to do it C, pg.3; wim-hi-wi (__-Bl-171-221) He will begin C, pg. 49; wi-m-hi-k-wi (__-131-171-211-221) He will begin it 9J, pg.3; mə-wi-cə-hi-k-wi (2-__-131-141-171-211-221) You all will begin C, pg. 46; mə-wi-m-ci-hi-wi (32-__-131-141-171-221) You all will begin C, pg. 46; wi-mi-k (__-1)1-211) They begin it 7C, pg. 2; wi-m-k-wi (__-131-211-221) He's beginning to di it C, pg. 40; wi-m-te (__-131-232) Don't begin C, pg. 40; y5-y-k (Vts121-132-211) She gets it again 9C, pg. 5; wi-wo (Vts221b-133) They do it for her J3, pg. 9; wi-wo-m (__-133-234) I do it for someone BS, pg.]; wi-wo-k (__-l33-211) He did it fir him BS, pg,3; wi-wo-?-wi (__-13:-181-221) I ll do it for him C, pg. 9; wi-wo-kwi-nyə (__-133-211-221-235) I did it for him C, pg. 10; wi-wo-cək-wi-nyə (__-B3-141-211-221-235) They did it for him C, pg. 6; nyawi-wo-ci-k-wi-nyə (21-__-133-141-211-221-235) They did it for him C, pg. 8; wi-wo-hi-k-wi (__-133-171-211-221) He will do it for you C, pg. 10; wī-wo-cə (__l3-141) They do it for him BS, pg. 8; mé-w-ci-m (Vtsl -133-141-234) They provide food for them J3, pg. ll; mé-w-ci-k (__-13)-141-211) They provide food for them 9J, pg. 4; má-w-ci (__-13-141) They provide food for them 12J, pg. 3; nyi-kav-o-wi (21-Vts14-133-221) When she cooked it for me C, pg. 16; wi-nya-ha-k-wi (Vts22lb-134-171-211-221) He ll also do it C, pg. 7; má.-nyə (Vts13-134) I also eat C, pg. 4; $m\acute{a}$ ·-nyu-wi (__-1 3 4-211) I also eat C, pg. 18; $m\acute{a}$ n-wi-nye (__-134-211-235) I also ate C, pg.3; mé-w (__-161) He makes him eat it J3, pg. 12; év-o-m (Vts14-161-234) He makes them listen 9J, pg. 1-2; táptáp-ο-η (Vtsllla2-161-182) He flattens it 9C, pg. 6; θəpǐt,1-ο-k (__-161-211) She hardens it 9C, pg. 4.

With 141 as initial suffix:

wi-ci (Vts22lb-14l) They do it 8C, pg. 1; ma-wi-ci (32-__-14l) You all do it 9C, pg. 7; ma-wi-ci-m (32-__-141-234) You all do it CA, pg. 2; wi:-ci-k (__-141-211) They do it BS, pg. 20; wi:-ci-k-wi (__-141-211-221) They do it BS, pg. 25; wi-ci-wi (__-14i-221) They do it 9C, pg. 1; wi-ci-ti-k (__-141-151-21i) They did it PW, pg. 6; wi-ctə-m (__-141-151-234) They did it 9J, pg.3; wi-ci-nyu (__-141-201) When it is done DWT2, pg. 10; wi-ci-hi-wi (__-141-171-221) They will do it SR, pg. 18; wi-ca-ki-nya (__-141-211-235) They didit 12J, pg.3; wi-cə-k-wi-nyə (__-141-211-221-235)m They did it 9J, pg.1; wi-ci-nyə (__-141-235) They did it SR, pg. 10; wi-c-θo (__-141-238) If they do it BS, pg. 5; mi-cipéq-ca (32-Vts122b-141) You all are punished C, pg. 44; nyi-hwil-ci-k (21-Vtsl11b2-141-211) When they plow it HSPD, pg. 1; hwd:1-ca-hi:-nya (-141-171-201) When they will plow HSPD, pg. 2; mawit, i-ci-m (-141-234) When they cook PW, pg. 8; nyi-kálawi-c (21-Vts23-141) When they work it 5C, pg. 1; nyi-kələwi-ci-ti-k (21- -141-151-211) When they worked it 7C, pg. 4; kwiw-ci-t (Vts 13-141-151) They stretched it 7C, pg. 9; kwi-c-nyu-m

táptáp-o-ŋ (Vtsllla2-161-182) He flattens it 9C, pg. 6; θəpíţl-o-k (-161-211) She hardens it 9C, pg. 4.

With 141 as initial suffix:

wi-ci (Vts22lb-141) They do it 8C, pg. l; mə-wi-ci (32-__-141) You all do it 9C, pg. 7; mə-wi-ci-m (32-__-141-234) You all do it CA, pg. 2; wi:-ci-k (__-141-211) They do it BS, pg. 20; wi:-ci-k-wi (__-141-211-221) They do it BS, pg. 25; wi-ci-wi (__-141-221) They do it 9C, pg. 1; wi-ci-ti-k (__-141-151-211) They did it PW, pg. 6; wi-ctə-m (__-141-151-234) They did it 9J, pg.3; wi-ci-nyu (__-141-201) When it is done DWT2, pg. 10; wi-ci-hi-wi (__-141-171-221) They will do it SR, pg. 18; wi-cə-ki-nyə (__-141-211-235) They didit 12J, pg.3; wi-cə-k-wi-nyə (__-141-211-221-235)m They did it 9J, pg.1; wf-ci-nyə (__-141-235) They did it SR, pg. 10; wi-c-θo (__-141-231) If they do it BS, pg. 5; mi-cipéq-ca (32-Vtsl22b-141) You all are punished C, pg. 44; nyi-hwa:1-ci-k (21-Vtslllb2-141-211) When they plow it HSPD, pg. 1; hwá:l-cə-hí:-nyə (__-141-171-201) When they will plow HSPD, pg. 2; mawit, i-ci-m (__-141-234) When they cook PW, pg. 8; nyi-kálawi-c (21-Vts23-141) When they work it 5C, pg. 1; nyi-kələwi-ci-ti-k (21-__-141-151-211) When they worked it 7C, pg. 4; kwiw-ci-t (Vts 13-141-151) They stretched it 7C, pg. 9; kwi-c-nyu-m

(__-141-201-234) When they weave 13J, pg. 8; má-cə-hə (__-141-171) They will eat 6C, pg. 10; má-ci-hí-k-wi (__-141-171-211-22L) Will they eat? C, pg. 8; má-c-wi-nyə (__-141-221-235) They ate it C, pg. 14; nyi-má-ci-m (21-__-141-234) When they eat it 6C, pg. 6; má-c-é?e (__-141-233) Are they eating? C, pg. 8; má-cu-wé?e (__-141-236) Did they eat? C, pg. 9; nyi-0i:-ci-k-05 (21-__-141-211-231) If they drink it C, pg. 6; ti-cə-θə-m (Vts14-141-192-234) In a little while he turned into it B, pg. 9.

151 occurred as initial suffix in the following sequences:

wi-t (Vts221b2-151) He did it B, pg. 9; wi-tə-m (__-151-234) He did it LS, pg. 13 má-t-wi (Vts13-151-221) He ate it C, pg. 7; θi:-ti-k (__-151-211) I was drinking CA, pg. 7; má-t-θɔ (__-151-231) If he ate it C, pg. 8.

171 occurred as an initial suffix in the following sequences:

$$\pm^{32}$$
 \pm^{171} $\pm^{(182)}$ -221

wi-hi (Vts22lb-171) He will do it C, pg. 46; wi-hi-wə (__-171-221) They will do it DWT2, pg. 4; 0i-hi-k-wi (Vts13-171-211-221) He will drink it SR, pg. 1; mə-má-h (32-__-171) Will you eat? C, pg. 10; mə-má-hî-ŋ-wi (32-___-171-182-221) Will you eat? C, pg. 48.

181 occurred as initial suffix in the following sequences:

$$\pm (32) \pm 181 \pm (235)$$

yo-? (Vtsl21-181) I got it C, pg. 7; tdm-?-wi (Vtsl4-181-221) He throws it C, pg. 8; təhɔ̃tə-?-wi-nyə (Vtsl3-181-221-255) I hit it C,

(__-141-201-234) When they weave 13J, pg. 8; má-cə-hə (__-141-171) They will eat 6C, pg. 10; má-ci-hí-k-wi (__-141-171-211-221) Will they eat? C, pg. 8; má-c-wi-nyə (__-141-221-235) They ate it C, pg. 14; nyi-má-ci-m (21-__-141-234) When they eat it 6C, pg. 6; má-c-é?ɛ (__-141-233) Are they eating? C, pg. 8; má-cu-wé?ɛ (__-141-236) Did they eat? C, pg. 9; nyi-0i:-ci-k-05 (21-__-141-211-231) If they drink it C, pg. 6; ti-cə-0ə-m (Vts14-141-192-234) In a little while he turned into it B, pg. 9.

151 occurred as initial suffix in the following sequences:

wi-t (Vts221b2-151) He did it B, pg. 9; wi-tə-m (__-151-234) He did it LS, pg. 13 má-t-wi (Vts13-151-221) He ate it C, pg. 7; 0i:-ti-k (__-151-211) I was drinking CA, pg. 7; má-t-05 (__-151-211) If he ate it C, pg. 8.

171 occurred as an initial suffix in the following sequences:

$$\pm 32 \pm 171$$
 $\pm (182) - 221$

wi-hi (Vts22lb-17l) He will do it C, pg. 46; wi-hi-wə (__-17l-22l) They will do it DWT2, pg. 4; 0i-hi-k-wi (Vts13-17l-2il-22l) He will drink it SR, pg. 1; mə-má-h (32-__-17l) Will you eat? C, pg. 10; mə-má-hi-ŋ-wi (32-__-17l-182-22l) Will you eat? C, pg. 48.

181 occurred as initial suffix in the following sequences:

$$\pm (21 \pm 181 \pm 221 \pm (235) \pm (236)$$

yp-? (Vtsl21-181) I got it C, pg. 7; t6m-?-wi (Vtsl4-181-221) He throws it C, pg. 8; taháta-?-wi-nya (Vtsl3-181-221-2:5) I hit it C,

pg. 16; θ i-?-wi (__-181-221) Am I drinking? C, pg. 52; θ i-?-wi-we (__-181-221-236) Did I drink? C, pg. 52.

182 occurred initially in the following sequences:

$$\pm^{32}$$
 \pm^{182} \pm (221) (236)

ma-má-ŋ (32-Vtsl3-182) You eat it C, pg. 51; má-ŋ-wi (__-182-221) Are you eating? C, pg. 14; ma-má-ŋ-wi (32-__-182-221) Are you eating? C, pg. 48; m-pita-ŋ-we (32-Vtsl1la2-182-236) Did you fill it? C, pg. 10; təli:-ŋ-wi (Vtsl3-182-221) You sign it BS, pg. 7; wi-ŋ (Vts22lb-182) You do it B, pg. 20.

192 occurred as an initial suffix in only one sequence: sikci-θə-m (Vtsllla2-192-2:4) They lay it flat off the ground B, pg. 21.

201 occurred as an initial suffix in the following sequences:

$$\pm 32$$
 $\pm 201 \pm (211)$

234 will be illustrated here also: (+21+32+234). má-nyə (Vtsl3-201)
When he ate it C, pg. 12; mə-há:ti-nyì-k (J2-Vtsl12la-201-211) When
you roped it PW, pg. 10; wi-nyi-m (Vts22lb-201-234) When he did it
LS, pg. 7; cimnyá:y-m (Vtsl3-234) When she chews it 8C, pg. 6;
mi-któki-m (J2-__-234) When you kicked it C, pg. 14; nyì-m-bi-m
(21-J2-__-234) When you drink it CA, pg. 7; nyâ-bi-m (21-__-234)
When I drink it CA, pg 6.

211 as an initial suffix occurred in the following sequences. 221 as an initial suffix will be illustrated here also:

yim5-k-θo (Vts14-211-231) If it's heavy C, pg. 9; ε-k-wi-ny

pg. 16; θ i-?-wi (__-181-221) Am I drinking? C, pg. 52; θ i-?-wi-we (__-181-221-256) Did I drink? C, pg. 52.

182 occurred initially in the following sequences:

$$\pm^{32}$$
 \pm^{182} \pm (221) (236)

ma-má-ŋ (32-Vtsl:-182) You eat it C, pg. 51; má-ŋ-wi (__-182-221) Are you eating C, pg. 14; ma-má-ŋ-wi (32-__-182-221) Are you eating C, pg. 48; m-pita-ŋ-we (32-Vtsllla2-182-226) Did you fill it? C, pg. 10; təli:-ŋ-wi (Vtsl:-182-221) You sign it BS, pg. 7; wi-ŋ (Vts22lb-182) You do it B, pg. 20.

192 occurred as an initial suffix in only one sequence: sikci-θə-m (Vtsllla2-192-2:4) They lay it flat off the ground B, pg. 21.

201 occurred as an initial suffix in the following sequences:

$$\pm^{32}$$
 \pm^{201} $\pm^{(211)}$

2.4 will be illustrated here also: +21+32+2.4. má-nyə (Vts13-201)
When he ate it C, pg. 12; mə-hɨ:ti-nyi-k (32-Vts112la-201-211) When
you roped it PW, pg. 10; wi-nyi-m (Vts22lb-201-234) When he did it
LS, pg. 7; cimnyá:y-m (Vts1-234) When she chews it 8C, pg. 6;
mi-któki-m (32-__-234) When you kicked it C, pg. 14; nyi-m-θi-m
(21-32-__-234) When you drink it CA, pg. 7; nyâ-θi-m (21-_-234)
When I drink it CA, pg 6.

211 as an initial suffix occurred in the following sequences. 221 as an initial suffix will be illustrated here also:

yimó-k-00 (Vts14-211-211) If it's heavy C, pg. 9; $\hat{\epsilon}$ -k-wi-ny

Sequences with 211 initial are: tam-wi (Vts14-221) I throw it C, pg. 9; cipéq-wi-nyə (Vts122b-221-235) He puzished him C, pg. 49; nyi-mə-cəɔn-wi (21-32___-221) When you fish C, pg. 1; wi-wi-nyə (Vts221b-221-235) He did it C, pg. 3.

As an initial suffix 236 occurred alone: ma-má-we (?2-Vtsl3-2)6)

Did you eat? C, pg. 14; má-we (__-236) Did he eat? C, pg. 14. A

contrast of 221 and 236 occurring alone is: wi-wi (Vts221b-221+ high

rising intonation Does he do it? C, pg. 6; wi-we (__-236) Did he

do it? C, pg. 6.

14.4.1.1 The following combinations of divisive prefixes with inflectional prefixes and suffixes occurred:

we:-sci:-m-cə-k-wi-nyə (11-Vts1121b2-112-141-211-221-2)5) They swept it away C, pg. 18; tá-təólə-m (71.1-Vts211-112) You scraped it off 13J, pg. 1; té-te5:1-k-wi-nye (71.1-___-211-221-235) She cooked them C, pg. 10; tá-tabla-m (71.1-__-2/4) When he cooked them C, pg. 41; té-təmó-y-k (71.1-Vtslllb2-132-211) They scratched again 8C, pg. 4; ti-titi-c-3-m (71.1-Vtsllla2-141-161-234) They flatten it 31, pg. 4; tô-tqá:v-ci-k (71.1- -141-211) They pound it BJ, pg. 4; tə-hin-ci-m (71.1-___-141-2:4) He moved it 4C, pg. 8; ti-təmpi; 5-wi (71.1-___-221) She filled it C, pg. 18; tε-shά-cə-θi-k (71.1-Vts2121-141-192-211) They hang them awhile 6C, pg.3; cf-camévu-k (71.2-Vtsl21-211) They clean it all up DWT2, pg. l; ci-cy-u:ti-ci-k (71.2-__-141-211) They put them there HSL, pg. 1; va-wi (54-Vts221b) He does it Ca, pg. 6; v-wi-k (54- -211) He does it Sr, pg. 14; və-wi-ci (54-__-141) They do it 8C, pg. 13; va-wi-ci-k (54-__-141-211) They do it BS, pg. 2; və-wi-ci-m (54-___-141-234) They do it HSL, pg. 7; nyû-v-wi-ci-m (21-54-__-141-2)4) When they do it 1/J, pg. 1.

Combinations of prefix divisives and status-quos were:

$$51-71.2 + \left(\begin{array}{c} 211 (+221 (+235)) \\ 171-221 \\ 234 \end{array}\right)$$

cî-c-néli-k (51-71.2-Vtsl21-211) He hit them C, pg. 62; cí-ci-néli-m (51-71.2-___-234) He hit them BS, pg. 19; cî-c-qém-k-wi (51-71.2-Vtsl22b-211-221) He hit them with a fist C, pg.3; cí-ci-qém-k-wi-nyə (51-71.2-___-211-221-235) He hit them C, pg.3; ci-c-qém-hu-wi (51-71.2-___-171-221) I will hit them C, pg.3.

Sequences with just prefix status-quos and inflectional suffixes:

ci-nól (51-Vtsl21) He hit it LS, pg. 4; cî-nól-cə-k-wĭ-nyə (51--141-211-221-235) They hit it C, pg. 7; ci-nal-ca (51-__-141) They hit it C, pg. 7; ci-nál-o-wi (51-__-161-211) I made him hit it C, pg. 42; ci-nál-3-k-wi (51-___-161-211-221) He made him hit it C, pg. 1; ci-nál-cə-hú-k-wi (51-___-171-211-221) They will be hit C, pg. 30; ci-nál-ta-k (51-___-151-211) He hit him (in the past) C, pg. 7; ci-nál-hî-k-wi (51-___-171-211-221) He will hit him C, pg. 9; ci-nál-ó-wi (51-__-161-221) I made him hit it C, pg. 22; ci-nál-kwi-nyə (51-__-211-221-2:5) He hit it (in the past) C, pg. 4; ci-nálk-wi (51-__-211-221) He hit it C, pg. 42; ci-n61-kə (51-__-211) He hit it C, pg. 9; ci-nél-wi (51-__-221) I hit it C, pg. 3; nyí-c-nél (21-51-) When he hit it C, pg. 4; mi-c-noli-m (32-51-__-234) When you hit it C, pg. 14; so-y5-k (81-__-211) They drag it HSL, pg. 6; ci-qam-hə (51-Vtsl22b-171) He will hit it C, pg. 6; yə-ha:nci-k-wi (52-___-141-211-221) They tamed it C, pg. 1; yi-han-ci-m (52- -141-234) They fix it LS, pg. 5; yα-ε:vi-ci-k (52-Vts14-141-211) They understand BS, pg. 53; sa-q6m-5-?-wi (81-Vtsl/a2-161-181-221) I made you hit it with a rock C, pg. 8.

14.4.1.2 The following are examples of suffix status-quos and inflectionals with and without prefix status-quos and inflectionals: Sequences with 211 initial are: tam-wi (Vts14-221) I throw it C, pg. 9; cipéq-wi-nyə (Vts122b-221-255) He punished him C, pg. 49; nyi-mə-cəɔn-wi (21-32___-221) When you fish C, pg. 1; wi-wi-nyə (Vts221b-221-255) He did it C, pg. 3.

As an initial suffix 236 occurred alone: ma-má-we (22-Vts13-236) Did you eat? C, pg. 14; má-we (__-236) Did he eat? C, pg. 14. A contrast of 221 and 236 occurring alone is: wi-wi (Vts221b-221+ high rising intonation Does he do it? C, pg. 6; wi-we (__-236) Did he do it? C, pg. 6.

14.4.1.1 The following combinations of divisive prefixes with inflectional prefixes and suffixes occurred:

With prefix and suffix status-quos: ci-yé-v (51-Vts222-101) He orders it CA, pg. 9; ci-yé-m (51-Vts221a-112) He sends it 5J, pg. 10; ci-yé-m-cî-m (51-___-112-141-234) They send them HSL, pg. 5-6; mi-ci-yé:-m-ci-m (32-51-___-112-141-234) You all send it BS, pg. 26; ci-yé:-m-ci-ò-k-wi-nyə (51-___-112-141-161-211-221-235) They made them send it BS, pg. 14; mi-ci-yé-mə-ts (32-51-___-112-232) Don't send it C, pg. 4; ti-yó-v-ci-k (84-Vts1121a-101-141-211) They sharpen it 7C, pg. 1-2.

With only suffix status—quos. 101 as status—quo: nyi-tu-vi-m

(21-Vtsl12la-101-234) When he dried it 7C, pg. 8-9; tú-v (__-101)

He dried it 8C, pg. 1; tú-v-tú-v-nyi-m (__-101-242-___-101-201-234)

When it's really dry 5C, pg. 2-3; y5:-v-cə (Vtsl21-101-141) They make

it BS, pg. 2; y5:-v-ci-k (__-101-141-211) They make it HSL, pg. 2;

y5:-vi-k (__-101-211) We make it LS, pg. 8; y5:-v-cə-h-nyi-k

(__-101-141-171-201-211) When they will make it 5C, pg. 1; y5:-vi-m

(__-101-234) He makes it BS, pg. 3; pú:-v-mi-k (Vtsl4-101-112-211)

They fill it BS, pg. 13-14.

With 102 as status-quo: nyu-wi-ti-k (21-Vts122b-102-211) When he finishes it PDLS, pg. 3; nyu-wi:-t-ci-k (21-__-102-141-211) When

ci-nál (51-Vtsl21) He hit it LS, pg. 4; ci-nál-ca-k-wi-nya (51-____-141-211-221-25) They hit it C, pg. 7; ci-n61-ca (51-___-141) They hit it C, pg. 7; ci-nál-o-wí (51-__-161-211) I made him hit it C, pg. 42; ci-nál-o-k-wi (51-___-161-211-221) He made him hit it C, pg. 1; ci-nál-cə-hú-k-wi (51-___-171-211-221) They will be hit C, pg. 30; ci-nál-ta-k (51-___-151-211) He hit him (in the past) C, pg. 7; ci-nál-hí-k-wi (51-__-171-211-221) He will hit him C, pg. 9; ci-nál-5-wi (51-___-161-221) I made him hit it C, pg. 22; ci-nál-kwi-nyə (51-__-211-221-2:5) He hit it (in the past) C, pg. 4; ci-nálk-wi (51-__-211-221) He hit it C, pg. 42; ci-n61-kə (51-__-211) He hit it C, pg. 9; ci-nál-wi (51-__-221) I hit it C, pg.3; nyí-c-nál (21-51-___) When he hit it C, pg. 4; mi-c-néli-m (2-51-___-234) When you hit it C, pg. 14; so-y5-k (81-__-211) They drag it HSL, pg. 6; ci-qam-hə (51-Vtsl22b-171) He will hit it C, pg. 6; yə-ha:nci-k-wi (52-___-141-211-221) They tamed it C, pg. l; yi-han-ci-m (52-___-141-234) They fix it LS, pg. 5; ya-f:vi-ci-k (52-Vts14-141-211) They understand BS, pg. 5]; sa-q6m-p-?-wi (81-Vts11/a2-161-181-221) I made you hit it with a rock C, pg. 8. The following are examples of suffix status-quos and in-14.4.1.2

flectionals with and without prefix status-quos and inflectionals:

they finish HSPD, pg. 1; mə-wi-tə-m-ci-m (32-___-102-112-14i-234) You finish it BS, pg. 3; wi-ti (__-102) I finish LS, pg. 9; wi-ti-ci (__-102-141) They finish B, pg. 20-21; wi-ti-ci-m (__-102-141-234) When they finish HSL, pg. 9; wi:-ti-ti-k (__-102-151-211) They finished it 7C, pg. 3; pú-ti-m-cû-k (Vts14-102-112-141-211) They cover it 7C, pg. 2; tinyú-ti-k (Vts11b1-102-211) He writes BS, pg. 20; tinyú-ti-k-wi-nyə (__-102-211-221-235) He wrote it C, pg. 11.

With III as status-quo: nάl-kə-k-wi-nyə (Vtsl3-III-211-221-235)

He swallowed it C, pg. 52; nάl-kə-wε (__-III-236) Did he swallow it? C, pg. 8.

With 112 as status-quo: cd-m-ci-m (Vts2121-112-141-234) They dump it DWTl, pg. 18; cd-m-kə (__-112-211) He dumps it HSL, pg. 6; wd-m (__-112) He takes it over there B, pg. 4; wd-m-ci-k (__-112-141-211) They take it away 7C, p. 10; wd-m-ci-k-wi (__-112-141-211-221) They took us there DWTl, pg. 12.

14.4.1. The following are combinations of prefix divisives plus status-quos with suffix status-quos or divisives:

tə-lw-d:y (71.1-Vtsl122-241.1) They marry them 9JA, pg. 1; tə-lw-d:y-ti-k (71.1-__-241.1-151-211) They are married 9JA, pg. 3; wɛ-cd-m-ci-m (11-Vts2121-112-141-2)4) They throw it away DWT2, pg. 6; ti-tú-v (71.1-Vtsl121a-101) He's drying it 6C, pg. 2; ti-tú-vi-ci-k (71.1-__-101-141-211) They dry it 6C, pg. 2; ci-y5-v (71.2-Vtsl21-101) They made them 4C, pg. 1; ci-y5-v-ci-k (71.2-__-101-141-211)

They made them 6C, pg. 10; ci-wi-ţi-k (71.2-Vts122b-102-211)
They finish them 7C, pg. 3; cə-wi-ţi-ti-k (71.2-___-102-151-211)
They finished them SR, pg. 5; cə-ky-á:y-vi-k (71.2-Vts122a-241.1-121-211)
They carry it B, pg. 23; cu-wi-ţi-v (71.2-Vts122b-102-121)
They were finished B, pg. 15; têt-s-kwi-n-vi-ci-k-yu (71.1-81-242-Vts111a2-103-121-141-211-222) They are being turned C, pg. 5;
te-s-kwi-n-vi-k-yu (71.1-81-___-103-121-211-222) It is being turned C, pg. 5.

The following are sequences of suffix divisives + status-quo affixes with and without prefix status-quo:

With 121: 0i:-v (Vts13-121) They drink BS, pg. 9; sod-v-k-yu (__-121-211-222) It is sold C, pg. 19; 0i:-wi-k-0i:-v-ol (__-121-211-242-___-121-191) It seems that we are always drinking LS, pg. 18; ta-5-v-5-wi (84-Vts12lal-121-161-221) He won't C, pg. 18; tak5-v-cə (Vts2121-121-141) They were exchanged 7C, pg. 10; tak5-v-5-k (__-121-161-211) They were made to exchange it 7C, pg. 10; tak5-v-cə (__-121-141) They exchange it 7C, pg. 9; nuwit-vi-ci-k-yu (Vts122b-121-141-211-222) They are cooking C, pg. 8; wi-ti-v (__-102-121) They were finished BS, pg. 15; cə0il-və-k-wi-nyə (Vts121-121-211-221-215) He washed it C, pg. 12; təkwi-v-hi-k-wi (Vts11la2-121-171-211-221) He il chase it C, pg. 12; təm5-vi-k-wi (Vts11lb2-121-211-221) He scratches it C, pg. 19.

they finish HSPD, pg. 1; mə-wi-ţə-m-ci-m (32-___-102-112-141-234) You finish it BS, pg. 3; wi-ţi (__-102) I finish LS, pg. 9; wi-ţi-ci (__-102-141) They finish B, pg. 20-21; wi-ţi-ci-m (__-102-141-234) When they finish HSL, pg. 9; wi:-ţi-ti-k (__-102-151-211) They finished it 7C, pg. 3; pú-ţi-m-cû-k (Vts14-102-112-141-211) They cover it 7C, pg. 2; tinyú-ţi-k (Vts11b1-102-211) He writes BS, pg. 20; tinyú-ţi-k-wi-nyə (__-102-211-221-235) He wrote it C, pg. 11.

With Ill as status-quo: nál-kə-k-wi-nyə (Vtsl:-111-211-221-2:5)

He swallowed it C, pg. 52; nál-kə-we (__-111-2:6) Did he swallow it? C, pg. 8.

With 112 as status-quo: cd-m-ci-m (Vts2121-112-141-234) They dump it DWTl, pg. 18; cd-m-kə (__-112-211) He dumps it HSL, pg. 6; wd-m (__-112) He takes it over there B, pg. 4; wd-m-ci-k (__-112-141-211) They take it away 7C, p. 10; wd-m-ci-k-wi (__-112-141-211-221) They took us there DWTl, pg. 12.

14.4.1.; The following are combinations of prefix divisives plus

tə-lw-á:y (71.1-Vts1122-241.1) They marry them 9JA, pg. 1; tə-lw-á:y-ti-k (71.1-__-241.1-151-211) They are married 9JA, pg. 3; wε-cá-m-ci-m (11-Vts2121-112-141-2)4) They throw it away DWT2, pg. 6; ti-tú-v (71.1-Vts1121a-101) He's drying it 6C, pg. 2; ti-tú-vi-ci-k (71.1-__-101-141-211) They dry it 6C, pg. 2; ci-y5-v (71.2-Vts121-101) They made them 4C, pg. 1; ci-y5-v-ci-k (71.2-__-101-141-211)

status-quos with suffix status-quos or divisives:

With 91 as initial suffix divisive: tinyú:-ci-vi-k (Vts2122-91-101-211) They follow each other B, pg. 26; kicí-cu-v (Vts23-91-121) They steal it PW, pg 16; kyú:-ci-cî-k (__-91-141-211) They took a step SR, pg. 7; pú-c-ci-m (__-91-141-234) They store them 6C, pg. 10.

With 135 as divisive suffix: wi-mo (Vts22lb-135) I think they did it 13J, pg. 1; wi-mo-c (__-135-141) I think they did it 13J, pg. 7.

14.4.2 The following are formative prefixes combining with inflectional prefixes and inflectional suffixes with Vtr:

ci-mí·-ci-k (51-Vtr212-141-211) They lay it down 5C, pg. 7; ci-mí-m (51-___-112) They lay it down 5J, pg. 5; ci-mí-ci-m (51-___-141-234) They lay her there 8C, pg. 2; ci-mí (51-___) He lays it down 5J, pg. 10; co-kwá-k (51-__-211) He puts it there 9C, pg. 14; kə-mí-mi-k (61-___-112-211) She brought it B, pg. 13; kə-mí-m-cî-m (61-__-112-141-234) She brought us DWT1, pg. 11; kə-mí-m-cî-k (61-__-112-141-211) DWT1, pg. 12; They got us; k-mí-ti-ô-k (61-__-151-161-211) They got us here DWT1, pg. 8; nyî-k-mí-m-ci-m (21-61-__-112-141-234) When they got us down there DWT1, pg. 17; ci-k-ná:-cə-h-nyî-k (51-61-__-141-171-201-211) When they will plan it PDLS, pg. 1; ci-k-ná:-cə (51-61-__-141) They plan it BS, pg. 19; ci-k-ná:-kə (51-61-__-211) He plans it 12J, pg. 1; n-cî-k-ná:-m

They made them 6C, pg. 10; ci-wi-ţi-k (71.2-Vts122b-102-211)

They finish them 7C, pg. 3; cə-wi-ţi-ti-k (71.2-___-102-151-211)

They finished them SR, pg. 5; cə-ky-á:y-vi-k (71.2-Vts122a-241.1-121-211)

They carry it B, pg. 23; cu-wi-ţi-v (71.2-Vts122b-102-121)

They were finished B, pg. 15; tet-s-kwi-n-vi-ci-k-yu (71.1-81-242-Vts111a2-103-121-141-211-222)

They are being turned C, pg. 5;

te-s-kwi-n-vi-k-yu (71.1-81-___-103-121-211-222) It is being turned

C, pg. 5.

The following are sequences of suffix divisives + status-quo affixes with and without prefix status-quo:

With 121: 0f:-v (Vts13-121) They drink BS, pg. 9; sod-v-k-yu (__-121-211-222) It is sold C, pg. 19; 0f:-wi-k-0f:-v-ol (__-121-211-242-___-121-191) It seems that we are always drinking LS, pg. 18; ta-5-v-o-wi (84-Vts12lal-121-161-221) He won't C, pg. 18; tak-v-cə (Vts2121-121-141) They were exchanged 7C, pg. 10; tak-v-o-k (__-121-161-211) They were made to exchange it 7C, pg. 10; tak-v-cə (__-121-141) They exchange it 7C, pg. 9; nuwit-vi-ci-k-yu (Vts122b-121-141-211-222) They are cooking C, pg. 8; wi-ti-v (__-102-121) They were finished BS, pg. 15; cə0úl-və-k-wi-nyə (Vts121-121-211-221-215) He washed it C, pg. 12; təkwi-v-hi-k-wi (Vts11la2-121-171-211-221) He 11 chase it C, pg. 12; təmɔ-vi-k-wi (Vts11lb2-121-211-221) He scratches it C, pg. 19.

(21-51-61- -234) When he plans it 12J, pg. 5; ci-kysti-k-wi (51-Vtr122-211-221) He cuts it C, pg. 15; nyi-ci-kyét i-ci-k (21-51- -141-211) When he cuts it C, pg.3; ku-vnów (61-) He lifts it C, pg. 15; ku-vn\u00e1w-hi-k-wi (61-___-171-211-221) He will lift it C, pg. 13; ku-vnów-5-wi (61-___-161-221) He makes him lift it C, pg. 13; ku-vnów-k-wi-nyo (61-___-211-221-255) He lifted it C, pg. 13; ku-vnéw-k (61-__-211) He lifts it C, pg. 11; nyi-kuvnów-ka (21-61-___-211) When he lifts it C, pg. 4; nyi-ku-vnów (21-61-) When he lifts it C, pg. 4; ki-na:-m (61-Vtr211-112) He points to it B, pg. 6-7; ki-ná-k-wi (61-___-211-221) He is pointing C, pg. l; ki-ná-m-k-wi (61-___-112-211-221) He is pointing C, pg. l; vi-yú:1-kə (62-Vtrl21-211) He mixes it HSPD, pg. 2; s-púl (81-Vtrl23) He soaks it HSPD, pg. 1; ta-púl-ci-m (84-__-141-234) When it's wet 13J, pg. 5; suv-k5-ka (82-Vtrll1-211) They fence it SR, pg. 9; suvk5-ci (82-__-141) They fence it SR, pg. 8; səv-k5-ci-m (82-___ -141-234) They fence it SR, pg. 4; tav-k5-ka (83-___-211) They block it SR, pg. 5.

The following are combinations of prefix and suffix formatives with Vtr::

ki-ná-v-ɔ̂ (61-Vtrl23-101-161) He tells it C, pg.); ki-ná-vi-m (61-__-101-234) They tell it PW, pg.3; ki-ná-v-ci-m (61-__-101-141-234) They tell it PDLS, pg. 11; ki-ná-v-ɔ̂-k-wi (61-___-101-161-211-221) He made him tell it C, pg. 55; ki-ná-v-ɔ̂-?-nyə (61-___-101-161-181-235) With 91 as initial suffix divisive: tinyú:-ci-vi-k (Vts2122-91-101-211) They follow each other B, pg. 26; kicí-cu-v (Vts23-91-121) They steal it PW, pg 16; kyú:-ci-cî-k (__-91-141-211) They took a step SR, pg. 7; pú-c-ci-m (__-91-141-234) They store them 6C, pg. 10.

With 1/5 as divisive suffix: wi-mo (Vts22lb-1/5) I think they did it 13J, pg. 1; wi-mo-c (__-1/5-14l) I think they did it 12J, pg. 7.

14.4.2 The following are formative prefixes combining with inflectional prefixes and inflectional suffixes with Vtr:

ci-mí·-ci-k (51-Vtr212-141-211) They lay it down 5C, pg. 7; ci-mí·m (51-___-112) They lay it down 5J, pg. 5; ci-mí-ci-m (51-___-141-24) They lay her there 8C, pg. 2; ci-mí (51-___) He lays it down 5J, pg. 10; cə-kwá-k (51-__-211) He puts it there 9C, pg. 14; kə-mí-mi-k (61-__-112-211) She brought it B, pg. 13; kə-mí-m-ci-m (61-__-112-141-234) She brought us DWTl, pg. 11; kə-mí-m-ci-k (61-__-112-141-211) DWTl, pg. 12; They got us; k-mí-ti-3-k (61-__-151-161-211) They got us here DWTl, pg. 8; nyî-k-mí-m-ci-m (21-61-__-112-141-234) When they got us down there DWTl, pg. 17; ci-k-ná:-cə-h-nyî-k (51-61-__-141-171-201-211) When they will plan it PDLS, pg. 1; ci-k-ná:-cə (51-61-__-141) They plan it BS, pg. 19; ci-k-ná:-kə (51-61-__-211) He plans it 12J, pg. 1; n-ci-k-ná:-m

I made him tell it C, pg. 10; mi-ki-nά-v-o (32-61-___-101-161) You made him tell it C, pg. 10; ki-nά-v-ô-nyə (61-___-161-235) I made him tell it C, pg. 3; ki-nά-vi-k (61-___-101-211) I tell it C, pg. 15; ki-nά-və-k-wi-nyə (61-___-101-211-221-235) He told it C, pg. 44; kə-kά-v-hú-?-wi (61-Vtr211-101-171-181-221) I will bring it C, pg. 10; ti-kά-v-ci-k (84-Vtr112-101-141-211) They gather it 9J, pg. 3; ti-kά-v-ci-m (84-___-101-141-234) They gather it PW, pg. 1; ti-kά-vi-c (84-___-101-141) We gather it DWT1, pg. 2; ti-kά-vi-k (84-__--101-211) It is gathered PDLS, pg. 2; ti-kά-v (84-___-101) He gathers it 9J, pg. 3; tə-kά-v-k-wi-wɛ (84-___-101-211-221-236) Did he gather it? C, pg. 9.

The following are combinations of prefix and suffix divisives. Most of these are given in the tables in Section 14.2:

$$+ \begin{pmatrix} 52 \\ 51 \\ 61 \\ 71.1-84 \end{pmatrix} + \frac{(91\pm)}{(1\pm)} \begin{pmatrix} (\pm 141) \\ \pm (234) \end{pmatrix} \begin{pmatrix} (\pm 221-235) \\ (\pm 234) \end{pmatrix}$$

yi-ci-nyɔv-ci-k (52-71.2-Vtr123-141-211) They hoe them DWT2, pg. 11;
ci-c-mi-ci-ci-m (51-71.2-Vtr212-91-141-234) They lay them down 5C,
pg. 7; ci-c-kwá-ci-ci-k (51-71.2-___-91-141-211) They put them there
HSL, pg. 4; ki-ci-pá-ci-ci (61-71.2-___-91-141) They fire me LS,
pg. 9; ki-c-pá-ci-ci-m (61-71.2-___-91-141-234) They let us go BS,
pg. 29; tá-ta-ká-v (71.1-84-Vtr112-101) He gathers them DWT2, pg. 10;
ki-ci-náw-k-wi-nyə (61-71.2-Vtr122-211-221-235) He lifted them C,
pg. 1; ki-ca-lkyɔ:-ca-k-wi-nyə (61-71.2-__-141-211-221-235) They
tied them C, pg.).

14.5 Compounding in Havasupai may be divided into 5 types. These will be described now and will be referred to here in a description of V compounds and later in N and P compounds.. The transformatives referred to here are decades 40 and 250.

The five types of compounding are:

- 1. Occurrence of one word with only one transformative.
 - la. Where both words in a compound are transformed by one transformative.
 - lb. Where only one word in a compound is transformed.
- Occurrence of only one word with transformative and formative.
 (formative here refers to formatives and status-quos)
 - 2a. Where both words in a compound are transformed.
 - 2b. Where only one word is transformed.
- 3a. Occurrence of one word with formatives and the other with transformatives where both are transformed.
- 3b. Occurrence of two words with transformatives where one is transformed.
- 4. Occurrence of one or two words with formatives where no transformatives occur.
- 5. No formatives or transformatives occurred in a compound.

The only types that occurred in V were lb, 4, 5. I think types 4, 5 are self-explanatory. In N compounds types la and lb contrasted. That is, in one compound a prefix transformative occurred before the second V, as in lb here, but in la the transformative occurred either before the total two word compound or after it on one of the V. The latter occurence was interpreted as transforming the whole sequence to an N while the

former occurrence transformed only one V. Since type 5 occurs, the occurrence of transformatives in these other types appears redundant. This feature of compounding in Havasupai is discussed in the section on N compounds.

In Vi and Vt compounds, the resultant takes the class of the Vi or Vt in the compound where, for example, the resultant is a Vi or Vt and just one Vi or Vt occurred in the compound. In the case of Vis + Vis -> Vis and Vts+Vts -> Vts, the resultant takes the class of that Vis or Vts in the compound which occurred with the most divisive affixes.

There are two types of Vi compounds - 4, 5:

$$N+Vis \rightarrow Vis$$
 $Vis+(Vis) \rightarrow Vis$
 (Vts)

No roots occurred in Vi compounds.

Examples of Vis+Vis in type 5 are: kwáta-m (to be forked)-saktá:po-m (to be clean) (Vis212al-234-Vis212al-234) -> Vis212al He is naked PW, pg. 20; nyá (to be black)-smá-ka (to sleep) (Vis222-Vis122a-211) -> Vis122a He got lost SR, pg. 8.

An example of Vis + Vts in type 5 is: wa (to sit)-y5-m (to get)
(Vis212al-Vts121-234) -> Vis212al He lives there.

An example of Vis and Vts in type 4 is: wa (to sit)-si-vi-k (to count) (Vis2l2al-Vtsl1la2-101-211) -> Vis2l2al He thinks SR, pg. 16.

14.5 Compounding in Havasupai may be divided into 5 types. These will be described now and will be referred to here in a description of V compounds and later in N and P compounds.. The transformatives referred to here are decades 40 and 250.

The five types of compounding are:

- 1. Occurrence of one word with only one transformative.
 - la. Where both words in a compound are transformed by one transformative.
 - lb. Where only one word in a compound is transformed.
- Occurrence of only one word with transformative and formative.
 (formative here refers to formatives and status-quos)
 - 2a. Where both words in a compound are transformed.
 - 2b. Where only one word is transformed.
- a. Occurrence of one word with formatives and the other with transformatives where both are transformed.
- b. Occurrence of two words with transformatives where one is transformed.
- 4. Occurrence of one or two words with formatives where no transformatives occur.
- 5. No formatives or transformatives occurred in a compound.

The only types that occurred in V were lb, 4, 5. I think types 4, 5 are self-explanatory. In N compounds types la and lb contrasted. That is, in one compound a prefix transformative occurred before the second V, as in lb here, but in la the transformative occurred either before the total two word compound or after it on one of the V. The latter occurence was interpreted as transforming the whole sequence to an N while the

Both of these examples occurred with affixes between the bases:

wd-?-y5-ti-kə (Vis2l2al-18l-Vtsl2l-15l-2ll) I lived there DWTl,

pg. 1; wd-ny-si-və-cə (Vis2l2al-2l-Vtsllla2-10l-14l) When they
think SR, pg. 16.

An example of Vis + Vis in type 4 is: yá-kə (to lay down)-pé-k-yu (to hang around) (Vis212a1-211-Vis212a1-211-222) -> Vis212a1 He is alive; pé-ţi-k (to be gone) (Vis212a1-Vis212a1-102-211) -> Vis212a1 He is drunk LS, pg. 5. 71.2 occurred between the bases here as a plural actor morpheme: (Vis212a1-71.2-Vis212a1-102-211) -> Vis212a1 They are drunk PDLS, pg. 5.

Types 1b, 4, 5 occurred in Vt compounds. Only type 4 occurred with roots.

Type 5 occurred in the sequence N-Vts: ha (water)-skyól (to dig a ditch) (N43-Vtsllla2) -> Vtsllla2 He irrigates HSPD, pg. 5-6.

This compound also occurred with an affix between the bases. This feature of compounding in Havasupai is obviously not uncommon: hanny-skyól-ci-m (N43-21-Vtsllla2-141-234) When they irrigate DWT2, pg. 8; mat (ground-land-dirt) hwal-k (to plant) (N412-Vtslllb2-211) -> Vtslllb2 He digs DWT2, pg. 5.

An example of Vis + Vts in type lb is: i (to say)-k-si-co-m (to name → one that is named) (Vis212a2-(41-Vtsllla2 - 141-234) → Nll32)

→ Vtsllla2 They call that one something HSL, pg.3.

Type 4 occurred in Vt compounds in the sequence Vtr; Vts: cî-c-mî (to lay it out) - ti-yɔ́:-və-ci-k (to sharpen it) ((51-71.2-R → Vtr212) - (84-(Vts121-101 → Vts121) → Vts121)) → Vts221 He makes borders DWT2, pg. 8.

15. N is defined as occurring in the diagnostic slot B:

former occurrence transformed only one V. Since type 5 occurs, the occurrence of transformatives in these other types appears redundant. This feature of compounding in Havasupai is discussed in the section on N compounds.

In Vi and Vt compounds, the resultant takes the class of the Vi or Vt in the compound where, for example, the resultant is a Vi or Vt and just one Vi or Vt occurred in the compound. In the case of Vis + Vis -> Vis and Vts+Vts -> Vts, the resultant takes the class of that Vis or Vts in the compound which occurred with the most divisive affixes.

There are two types of Vi compounds - 4, 5:

No roots occurred in Vi compounds.

Examples of N + Vis in type 5 are: mɑ̂:t (flesh)-p-ui-k-yu (they die) (N412-Vis212b-241.2-211-222) — Vis212b They are embarrassed PW, pg. 1; pâ (man~indian~person)-0św (little) (N1152-Vis221) — Vis221 She gave birth SR, pg. 5. nya (that)-um-k (negative) (N122-Vis121al-211) — Vis121al If not 5C, pg. 5.

Examples of Vis+Vis in type 5 are: kwáta-m (to be forked)saktá:po-m (to be clean) (Vis212al-234-Vis212al-234) -> Vis212al He
is naked PW, pg. 20; nya (to be black)-smá-ka (to sleep) (Vis222Vis122a-211) -> Vis122a He got lost SR, pg. 8.

An example of Vis + Vts in type 5 is: wæ (to sit)-y5-m (to get)
(Vis212al-Vts121-234) -> Vis212al He lives there.

An example of Vis and Vts in type 4 is: wa (to sit)-si·-vi-k (to count) (Vis2l2al-Vtsllla2-101-211) -> Vis2l2al He thinks SR, pg. 16.

+ $\begin{cases} 241.1,.2 \\ 141 \\ 71.3 \end{cases}$ ++311+321#. No other form class occurred

with 311 without also occurring with N. This is not circular for the following reason. Sub-classes Visll, 22 may occur with 311, but only when preceded by an N. I know that it is the N class that is preceding Visl1, 22 in these sequences because N may not occur with 53, a divisive prefix for Visll, 22, nor may N occur in the diagnostic slot A for all V. Moreover N may occur with 311 preceding a V without also occurring with Visl1, 22 but these Vi sub-classes only occur with 311 in sequence with N. For these reasons N and these Vis sub-classes are classed in different form classes. The morpho-syntactic rule for the occurrence of 311 with Visl1, 22 is that in the sequence (N-311 ± 321 ± Visl1, 22), 311 may occur optionally on the N or with the Vis: pá-v-c+háyatú-pa+háyatú-v-c He is a thirsty man C, pg. 18. By the same rule Visl1, 22 may occur with 321: hmé-c+qéca-hms+qéca-c a little boy C, pg. 6.

Examples of the nine major N sub-classes follow: məsi--v-c (N-311-221) A girl DWTl, pg. 5; há:-v (N-311) a cotton-wood tree 5C, pg. 6; kwé-v (N-311) something LS, pg. 3; ká-v (N-311) what PDLS, pg. 18; hæykú-v-c (N-311-321) The white man 4C, pg. 2; hmé-v-c (N-311-321) a boy BS, pg. 25; pəq-úi-v (N-241.2-311) women PW, pg. 2; inyá-ci-v (N141-311) we BS, pg. 5-6; nyá-v (N-311) that 9J, pg. 4.

The first sub-division is into 6 classes depending upon whether a given N occurs with any one of the five allomorphs of the plural morphemes or are incompatible with this plural morpheme: hmd:ny (N5-71.3) children DWT1, pg. 5; wi: (N5-71.3) rocks 4C, pg. 7; 5-n

Both of these examples occurred with affixes between the bases:

wd-?-y5-ti-kə (Vis212al-181-Vts121-151-211) I lived there DWT1,

pg. 1; wa-ny-si-və-cə (Vis212al-21-Vts11la2-101-141) When they
think SR, pg. 16.

An example of Vis + Vis in type 4 is: yá-kə (to lay down)-pé-k-yu (to hang around) (Vis2l2al-2ll-Vis2l2al-2ll-222) — Vis2l2al He is alive; pé-ţi-k (to be gone) (Vis2l2al-Vis2l2al-102-2ll) — Vis2l2al He is drunk LS, pg. 5. 71.2 occurred between the bases here as a plural actor morpheme: (Vis2l2al-71.2-Vis2l2al-102-2ll) — Vis2l2al They are drunk PDLS, pg. 5.

Types lb, 4, 5 occurred in Vt compounds. Only type 4 occurred with roots.

Type 5 occurred in the sequence N-Vts: ha (water)-skyol (to dig a ditch) (N43-Vtsllla2) - Vtsllla2 He irrigates HSPD, pg. 5-6.

This compound also occurred with an affix between the bases. This feature of compounding in Havasupai is obviously not uncommon: hanny-skyol-ci-m (N43-21-Vtsllla2-141-234) When they irrigate DWT2, pg. 8; mat (ground~land~dirt) hwal-k (to plant) (N412-Vtslllb2-211) - Vtslllb2 He digs DWT2, pg. 5.

Type 4 occurred in Vt compounds in the sequence Vtr+Vts: cî-c-mî (to lay it out) - ti-yɔ:-və-ci-k (to sharpen it) ((51-71.2-R -> Vtr212) - (84-(Vts121-101-> Vts121) -> Vts121)) -> Vts221 He makes borders DWT2, pg. 8.

15. N is defined as occurring in the diagnostic slot B:

(N4-312-341) a lot of fire N, pg. 5; cút (N4-341) years DWT1, pg. 5; paqí (N3) woman 8C, pg. 9-paq-úi (N3-241.2) women B, pg. 1 (only one member in this class occurred in the corpus); kiðiyé: (N2) doctor~medicine man J3, pg. 5 -kiðiy-áy (N2-241.1) doctors~medicin men LS, pg. 2; homé (N2) son B, pg. 5; -hóm-ay (N2-241.1) sons B, pg. 9-10; kwá:-ca (N1-141) horns B, pg. 16; nyikwá:y-ca (N1-141) coats HSL, pg. 8; nyínyú-c (N1-141) those DWT2, pg. 1; nyihá-c (N1-141) they BS, pg. 15-16. The plural of first, second, and third persons and demonstratives is formed by adding 141 to the same base in the singular: nyihá-c (N1-311) he~it SR, pg. 8. 141 and 321 co-occur: nyihá-cu-c (N1-141-321) they C, pg. 1; pá-cu-c (N1-141-321) men 5C, pg. 1; N6 do not occur with the plural morpheme: kwé-n (N6-212) something 12J, pg. 1; ká-n (N6-312) what C, pg. 3.

Nl is divided into Nll (+312) and Nl2 ()(312): civs5-ny (Nll-312) that rib 7C, pg. l; hwat-nyə (Nll-312) that blood 5J, pg. 8.

N12 is divided into N121 ()(136, 111) and N122 (+136, 111): viyá-k
(N122-111) in this direction C, pg. 20; yá-1 (N122-136) in this C, pg. 5.

MIZI is divided into N1211 and N1212 syntactically: N121 always precedes a goal which in turn is always followed by N1212. This sequence is fixed: nyi0á+515+nyá+nyihát+ci-qám-k-wi (N1211+N112+N1212+Vis211b+51-Vts121-211-221) He hit my horse C, pg. 5. The same morphemes are used for N1211 (actor) and N1212 (possessor).

N3, 4, 5 and N11 are further each syntactically divided into three subclasses depending upon whether they may be possessed by free form wi: (Vis211b) to own - N31, N41, N51, N111 or nyihát (Vis211b) to own - N32, N42, N52, N112, or are incompatible with these two free forms - N33, N43, N53, N113. It appears that these sub-classes also have semantic # + $\begin{cases} 241.1, 2\\ 141\\ 71.3 \end{cases}$ ++311+321#. No other form class occurred

with 311 without also occurring with N. This is not circular for the following reason. Sub-classes Visil, 22 may occur with 311, but only when preceded by an N. I know that it is the N class that is preceding Visil, 22 in these sequences because N may not occur with 53, a divisive prefix for Visil, 22, nor may N occur in the diagnostic slot A for all V. Moreover N may occur with 311 preceding a V without also occurring with Visil, 22 but these Vi sub-classes only occur with 311 in sequence with N. For these reasons N and these Vis sub-classes are classed in different form classes. The morpho-syntactic rule for the occurrence of 311 with Visil, 22 is that in the sequence (N-311 ± 321 ± Visil, 22), 311 may occur optionally on the N or with the Vis: pá-v-c+háyatú~pa+háyatú-v-c He is a thirsty man C, pg. 18. By the same rule Visil, 22 may occur with 321: hmé-c+qéca~hme+qéca-c a little boy C, pg. 6.

Examples of the nine major N sub-classes follow: məsi·-v-c (N-11-221) A girl DWTl, pg. 5; há:-v (N-11) a cotton-wood tree 5C, pg. 6; kwé-v (N-11) something LS, pg. 3; ká-v (N-11) what PDLS, pg. 18; hæykú-v-c (N-11-321) The white man 4C, pg. 2; hmé-v-c (N-11-321) a boy BS, pg. 25; pəq-úi-v (N-241.2-11) women PW, pg. 2; inyá-ci-v (N141-11) we BS, pg. 5-6; nyú-v (N-11) that 9J, pg. 4.

The first sub-division is into 6 classes depending upon whether a given N occurs with any one of the five allomorphs of the plural morphemes or are incompatible with this plural morpheme: hmd:ny (N5-71.3) children DWTl, pg. 5; wi: (N5-71.3) rocks 4C, pg. 7; 5-n

boundaries: only inanimate N occur with wi:; only animate non-human occur with nyihát and only human are incompatible with these two possessive free forms. The one exception to these groupings is the morpheme paqi woman which occurred with wi: in N31. The only N occurring in the corpus in N2 were human and they did not occur with either one of the possessive free forms. This is a very small class. I do not think that in a future corpus this class will have any members which will occur with any one of these possessive free forms.

N51, N41, N31, N31, N31, N31 are further divided into two sub-classes, N511, N512, N411, N412...depending upon the restrictions of occurrences of nouns in these classes with wi: in sequence with the sub-class N1211. All of these classes which occur with wi: and their sub-classes will be illustrated now through N5 in the first and second person: all members of N51 may occur in the following sequences: wi+nya+wi-v (N51+N1211+Vis211b-121) I own the stone or my stone C, C; wa+nya+wi-v (N51+N1211+Vis211b-121) I own the house or my house C, C; wi+ma-m+wi-v (N51+N1211-112+Vis211b-121) You own a stone or your stone C, C; wa
+ma-m+wi-v (N51-N1211-112+Vis211b-121) You own a house or your house C, C.

Only N512 (wi-stone) may occur with the second person in the following sequence: mû+wi-n+wi-v (N1211+N512-312+Vis211b-121) You own a stone or your stone C, C.

Only N511 (wa-house) may occur with the second person in the following sequence: ma-m+wa-c (Nf211-112+N511-321) You own a house or your house C, C. This division of N51 into N511 and N512 applies to all the other sub-classes described above: N411 occurs in sequence with wi: and the second person as does N511, and N412 occurs in these sequences as

(N4-312-341) a lot of fire N, pg. 5; cút (N4-341) years DWT1, pg. 5; paqí (N3) woman 8C, pg. 9-paq-úi (N3-241.2) women B, pg. 1 (only one member in this class occurred in the corpus); kiðiyé: (N2) doctor~medicine man J3, pg. 5 -kíðiy-áy (N2-241.1) doctors~medicin men LS, pg. 2; homé (N2) son B, pg. 5; -hóm-ay (N2-241.1) sons B, pg. 9-10; kwá:-ca (N1-141) horns B, pg. 16; nyikwá:y-ca (N1-141) coats HSL, pg. 8; nyínyú-c (N1-141) those DWT?, pg. 1; nyihá-c (N1-141) they BS, pg. 15-16. The plural of first, second, and third persons and demonstratives is formed by adding 141 to the same base in the singular: nyihá-c (N1-311) he~it SR, pg. 8. 141 and 321 co-occur: nyihá-cu-c (N1-141-321) they C, pg. 1; pá-cu-c (N1-141-321) men 5C, pg. 1; Nó do not occur with the plural morpheme: kwé-n (N6-312) something 12J, pg. 1; ká-n (N6-312) what C, pg. 3.

Nl is divided into Nll (+312) and Nl2 ()(312): civs5-ny (Nll-312) that rib 7C, pg. l; hwdt-nyə (Nll-312) that blood 5J, pg. 8.

N12 is divided into N121 ()(136, 111) and N122 (+136, 111): viyá-k
(N122-111) in this direction C, pg. 20; yá-1 (N122-136) in this C, pg. 5.

NIZI is divided into NI211 and NI212 syntactically: NI21 always precedes a goal which in turn is always followed by NI212. This sequence is fixed: nyi0á+515+nyá+nyihát+ci-qám-k-wi (NI211+NI12+NI212+Vis211b+51-Vts121-211-221) He hit my horse C, pg. 5. The same morphemes are used for NI211 (actor) and NI212 (possessor).

N3, 4, 5 and NII are further each syntactically divided into three subclasses depending upon whether they may be possessed by free form wi: (Vis211b) to own - N31, N41, N51, NIII or nyihát (Vis211b) to own - N32, N42, N52, N112, or are incompatible with these two free forms - N33, N43, N53, N113. It appears that these sub-classes also have semantic

does N512 and so on. This sub-division only occurs with those nouns occurring with wi. In the second person, then the orders of second person, N and verb possessive may be different, but only certain fixed orders occur with certain sub-classes.

Only Noccurring with wi:, except N311, 312, occur with 331: kwá-vi-m (N1112-311-331) with a knife C, pg. 14; yitátu-ma (N412-331) With a rock BS, pg. 32.

All those nouns occurring with nyihát occur in only one sub-class.

This class will be illustrated through N112: 515+nye+nyihát (N112+N1212+Vis211b) I own a horse or my horse C, C.

The class of N occurring without the two possessive free forms occurs with N212 preceding it which additionally differentiates it from other N: nya+tála (N1212+N113) my father C, C; nyf0á-c+ci-tá-c (N1212-141+301-N113-141) their fathers C, C. This last example divides N113 into N1131 (+301-relative classifier) and N1132 ()(301).

Sub-classes of N6 are N61()(54, 121, +112) and N62 (+54, 121,)(112): kwé-m (N61-112) something DWT2, pg. 6; vo-ká (54-N62) who~what C, pg. 11; ká-vi-nyî-k (N62-121-201-211) sometimes PDLS, pg. 1.

15.1 Sequences of divisive and non-divisive affixes with N follow. The divisive affixes occurring alone have already been illustrated in 15. Only some will be repeated here. If a particular non-divisive affix sequence is illustrated here in one sub-class that sequence occurs with all sub-classes even though they may not be exemplified. If a divisive affix is included in these sequences all sub-classes occurring with that divisive affix may occur with that total sequence even though they are not illustrated. For all N I would say the following sequence was permissible in

appropriate sub-classes: $\pm 310 \pm 320 \pm 330$. V affixes occurring with N are 111, 151, 222, 171, 136, 21, 30, 180, 211, 234. These would occur with N in the olders and combinations permissible for all V. That is, I would say the following combinations would be permissible for all N in their appropriate sub-classes: $(\pm 21 \pm 30 \pm 310 \pm (136) \pm 320 \pm 330) \pm (\pm 141 \pm (151) \pm 180 \pm 201 \pm 211 \pm 222 \pm (234)$. All sequences will be optional.

Combinations of divisive and non-divisive affixes which occurred in the text follow:

With NI: ci-ci:-c (301-NIII1-321) mother C, pg. 10; ci-ci-ny (301-___-312) mother BS, pg. 7; ci-ci-n-c (301-NIII1-312-321) mother 9JA, pg. 1; ci-c (__-321) mother C, pg. 9; ci-tá-ci-ny (301-__-141-312) fathers BS, pg. 6-7; pá:y-ci-ti-k (NIII2-141-151-211) When they were people B, pg. 1; məsi-v-cu (__-311-321) girls DWT1, pg. 5; pá:-cu-v (__-141-311) men HSL, pg. 4-5; pá-cu-c (__-141-321) people 5C, pg. 1; pá-h (__-313) the man C, pg. 8; pá-hâ-c (__-313-321) the man C, pg. 16a; yú-ci-n-c (NI12-141-312-321) the faces 8C, pg. 13-14; nyimi:-c (N112-321) bobcat B, pg. 1; 510-v (__-311) horse SR, pg. 6; məpáti-n-c (__-312-321) legs 8C, pg. 8; há:-ci-ny (NIII1-141-312) the dresses HSL, pg. 11; kwát-nyî-k (__-311-111) cans PDLS, pg. 8-9; má-m (NI211-112) you C, pg. 1 viyá-cu-v-c (N122-141-311-321) these C, pg. 20. 311 with 31 was illustrated in the section on sub-classes.

With N2: má:ti-v (N2-241.1-311) the boys BS, pg. 25-26;
kíðiyé-n-c (N2-312-321) doctor 5J, Pg. 10-11; kíðiyé-n (N2-312)
doctor 5J, pg. 10; hmá·ti-c (N2-241.1-321) the boys C, pg. 10;
hmé-v (N2-311) this boy C, pg. 11; hmé-v-c (N2-311-321) this boy
C, pg. 5; hmé-ha-c (__-313-321) the boy C, pg. 4; hmé-m (__-112)
boy C, pg. 1; hmé-m-c (N2-312-321) that boy C, pg. 5; hmé-c
(__-321) the boy C, pg. 9; hmé-h (__-313) the boy C, pg. 8; hmé-k
(__-111) boy C, pg. 24; hmátu-v-c (__-241.1-311-321) these boys
C, pg. 14; hmé-m-c (__-112-321) this is the boy C, pg. 6; hmé-ny
(__-312) C, pg. 10; hmé-v-ci-k-yu (__-311-321-211-222) It is a boy
C, pg. 50.

With N3: pəqi;nyi-m (N311-201-234) When a woman...9JA, pg. 1;
pəqi:=n=c (__-312-321) A woman 9JA, pg. 2; pəq-ui-ny (__-241.1-312) The women PW, pg. 5; pəq-ui-v (__-241.1-311) The women PW,
pg. 2; pəqi-nyə (__-312) That woman C, pg. 33; pəqi-c (__-321)
the woman C, pg. 15.

With N4: kw5:w-c (N411-321) hair B, pg. 14; 09p6li-v-ci-m (__-311-321-234) peaches PDLS, pg. 2; kw5-my (N42-312) deer B, pg. 12; m6t-vu-k (N412-311-111) ground LS, pg. 17; hl5-m (N42-112) rabbit B, pg. 11; p6ti-n-c (N43-312-321) the edges 7C, pg. 7; m6tiki-1 (N411-136) in the beans 6C, pg. 4; f-n-k (__-312-111) wood 7C, pg. 2; f-ha (__-313) wood C, pg. 9; m6ti-k (N412-111) round C, pg. 1; m6ti-1-yû-m (__-136-222-234) it is in the meat C, pg.3; nyimsú-k-yu (__-211-222) It is dry blood 8C, pg. 4; hw61-vi-m (N43-311-112) boards 5C, pg. 9; haykú:-v-c (__-311-321) the white man 4C, pg. 2; h6:-v (__-311) water B, pg. 18; cúti-k (__-1ii) years PW, pg. 22.

N4 with peefixes: nyi-cuti-m (21-N43-234) when it s winter 6C, pg. 5;

does N512 and so on. This sub-division only occurs with those nouns occurring with wil. In the second person, then the orders of second person, N and verb possessive may be different, not only certain fixed orders occur with certain sub-classes.

Only N occurring with wi:, except N311, 312, occur with 331: kwá-vi-m (N1112-311-331) with a knife C, pg. 14; yitátu-ms (N412-331) With a rock BS, pg. 32.

All those nouns occurring with nyihát occur in only one sub-class.

This class will be illustrated through Nl12: 5lo+nyo+nyihát (Nl12+Nl212+Vis211b) I own a horse or my horse C, C.

The class of N occurring without the two possessive free forms occurs with N212 preceding it which additionally differentiates it from other N: nya+tála (N1212+M113) my father C, C; ny+06-c+ci-tá-c (N1212-141+301-N113-141) their fathers C, C. This last example divides N113 into N1131 (+301-relative classifier) and N1132 ()(301).

Sub-classes of N6 are N61()(54, 121, +112) and N62 (+54, 121,)(112): kwé-m (N61-112) something DWT2, pg. 6; və-ká (54-N62) who~what C, pg. 11; ká-vi-nyî-k (N62-121-201-211) sometimes PDLS, pg. 1.

15.1 Sequences of divisive and non-divisive affixes with N follow. The divisive affixes occurring alone have already been illustrated in 15. Only some will be repeated here. If a particular non-divisive affix sequence is illustrated here in one sub-class that sequence occurs with all sub-classes even though they may not be exemplified. If a divisive affix is included in these sequences all sub-classes occurring with that divisive affix may occur with that total sequence even though they are not illustrated. For all N I would say the following sequence was permissible in

ma-mi-ny (32-N42-312) your feet HSL, pg. 13; ma-hayk-yú-nya (32-N43-222-235) you white men SR, pg. 18-19.

With N5; hmá:nyi-m (N53-713-112) The children 4C, pg. 5; hmá:nyi-n-c (__312-321) The children 6C, pg. 2; hmá:nyi-v-c (__-71.3-311-321) the children DWT1, pg. 1; hmá:nyi-t (__-71.3-151) when we were young LS, pg. 14-15; hmá:nyi-c (__-71.3-321) the children C, pg. 4; há:-v (N511-311) cottonwood tree 5C, pg. 6; wá-nyə (__-312) that house 5C, pg. 10; wá-m (__-112) houses 4C, pg. 4; nyuwá-1 (__-136) in the house DWT1, pg. 2; wi-vi-m (N512-311-331) with a rock BS, pg. 2; wi-ki-c (__-111-321) the rocks wá-ha (N511-313) the house C, pg. 4; wá-h-c (N___-313-321) the house C, pg. 13; háti-k (N52-111) the dog C, pg. 11; háti-c (__-321) the dog C, pg. 11; ká-nyi-m (__-201-234) when it was a pinion tree C, pg. 4. Only 32 occurred with N52; mə-hú your head PW, pg. 18-19.

With N6: kwé-n-c (N61-312-321) something 12J, pg. 1; kwé-vi-l (__-311-136) in something 6C, pg. 6; ké-nyi-m (N62-201-234) when 4C, pg. 3; ké-c (__-321) what who somebody C, pg. 32.

15.1.1 Sequences of V combining with transformative affixes 243,321, 40 and 250 to become N follow. All the compatible and incompatible sequences for V and N and their sub-classes given in the V and N sections above apply here. The formula below is generalized. A sequence which is incompatible may be given in the formula here, but it is to be understood that this sequence does not and will not occur in the corpus. Affixes occurring only with N, occurring with V and N and those occurring only with V may occur in sequence here. The affixes with which only V occur are those not listed in the beginning of the N section and

all those which occur in decade 10-250 except 193. 300-340 do not occur with V except when the V has been transformed to an N.

The V will be taken by sub-classes, occurring with 41 first. Vis12lb2: k-yú-31-k-yu ((41-___-191-211-222) → N43) He appears sick → the one that looks sick C, pg. 3; ki-yú-ci-n-c ((41-___-141) → N43-312-J21) to be → some of them C, pg. 46; ki-yú-ha ((41-____) → N43-313) to be → it is the one C, pg. 23; ki-yú-c ((41-___) → N43-J21) to be → it is the one C, pg. 23; ki-yú-v ((41-___) → N43-J11) to come ⇒ the one who comes C, pg. 10; ki-yú-ci-ha ((41-___-141) → N43-J13) to be → the ones C, pg. 26; ki-yú-ci-c ((41-___-141) → N43-J21) to be the ones C, pg. 26; ki-yú-we ((41-___-236) → N43) was he the one? C, pg. 25; ki-yú-nyə ((41-___-235) → N43) to be → he was the one C, pg. 25; k-yú-ci-ny ((41-___-141) → N43-J12) to be → those that were 13J, pg. 9; ki-yú-ci-v ((41-___-141) → N43-J11) to be → these that are BS, pg. 22; k-yú-ci-m ((41-___) → N1111-J21-2J4) to be → someplace B, pg. 27; nyî-k-yú-ti-k ((21-41-___-151-211) → N43) to be → when that one was here 7C, pg. 8-9.

With Vis212al: kf-yimá-c ((41-__)→ N1132-121) to dance → the dancer C, pg. 19; kf-yimá ((41-__)→ N1132) to dance → the dancer C, pg. 10; ki-wá-ha ((41-__)→ N43-313) to sit → a sitter C, pg. 24; k-mú:-c ((41-__)→ N1132-321) to move away → a mover C, pg. 2; ki-mú-ci-yu ((41-__-141-222)→ N1132) to move away → the movers C, pg. 2; ku-wá-c-ε ((41-__-141-223)→ N43) to sit → sitters? C, pg. 30; kə-mi:-yu-c ((41-__-222)→ N1132-321) to cry → the one who cries C, pg. 16; kə-mi-yu ((41-__-222)→ N1132) to cry → the one who cries C, pg. 5; ku-wá-wε ((41-__-236)→ N43) to sit → who was that one sitting there? C, pg. 3; ku-pέ-n-c ((41-__)→ N43-312-321) to live → the one who lives here 1 J, pg. 7; k-swáta ((41-__)→ N1132) to sing → the singer PDLS, pg. 6.

With Vis212a3: ki-yá:-m-ci-yû ((41-__-112-141-222)→ N1132) to go → one who goes SR, pg. 4.

With Visl3: ki-céw-vi-ha ((41-___-121) → N1112-313) to fight → the fight C, pg. 15; k-má:-v-c ((41-___) → N1132-311-321) to eat → the one who eats C, pg. 3; kə-θi:-vi-n-c ((41-___-121) → N1111-312-321) to drink+the drinks PW, pg. 14.

With Vislli: ka-k-á:y-ny ((41-___-241.1) → N2-312) to be dirty → the dirty ones HSL, pg. 9; ki-cq-á-c ((41-__-241.1) → N2) to be small → the little ones BS, pg.30.

With Visl121: kú-və-há:ni-m ((41-53-__-112) → N1132) to be good → the good one PDLS, pg. 5; kə-háni-m ((41-__-112) → N1132) to be good → the good one 7C, pg. 1-2

With Vis222: ki-θpá-nyə ((41-___)→ Nllll-J12) to be cold → the cold 8C, pg. 7; ka-mwákə-θə-n ((41-___-192)→ Nllll-J12) to be soft →

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one that is soft CA, pg. 4-5; kú-məwə-m ( (41-__-112-234)--->
Nilll) to be warm —the spring C, pg. 10; ki-mú ((41-__) —
NIIII) to be new \rightarrow the new one C, pg. 21; ka-mi·-c ( (41-__) \rightarrow
Nllll-321) to be tall \Rightarrow the tall one C, pg. 5; ka-mi-ha ( (41-___) \rightarrow
   NIIII-313) to be tall -the tall one C, pg. 7; ka-mi-m-c ((41-
        N1111-312-321) to be tall \rightarrow the tall one C, pg. 5.
    With Vis221: k-tá:y ( (41-_)\rightarrow N53) to be old \rightarrow the old one
7C, pg. 10; k\hat{u}-v-táy-k ( (41-53-__-211) \rightarrow N53) to be big \rightarrow the big
one BS, pg. 31; ku-v-táy ( (41-53-_) \Rightarrow N53) to be big \Rightarrow the big
one 7C, pg. 1-2; ki-tá:y-v-c ( (41-__)-> N53-311-321) to be old
\rightarrow the old one 13J, pg. 7; ki-tá:y-v ( (41-___)\rightarrow N5J-311) to be
old \rightarrow the old one PDLS, pg. 1; ki-tay-c ( (41-___) \rightarrow N53-321) to be
old \rightarrow the old one C, pg. 8; ki-táy-m ( (41-__-112) \rightarrow N53) to be
old \rightarrow the old one C, pg. 8; ki-tá:y-v ( (41-___)\rightarrow N53-311) to be
 old the old one PDLS, pg. 1.
     41 with transitive verbs. With Vtsllta: ku-hwal-c ((41-__)->
 N11.32-321) to plant \rightarrow the farmer C, pg. 11
     With Vts22lb: ku-wi-c ((41-__)-> N1132-321) to do -> the one who
 does it C, pg. 1; k-wi-cu-c ((41-_-141)\rightarrow N1132-321) to do \rightarrow the
 ones who do it C, pg. 24.
     With Vts122a: ki-c-ky-a:y-vi-k ( (41-71.2-__-121-241.1) ->
    N2) to stand -> the ones who stand HSL, pg. 4.
     With Vtsl21: ki-y5:- √ ( (41-__-101) → N1132-321) to make it ->
    the one who makes it C, pg. 2; ki-yi:-v ( (41-_-101)\rightarrow N1D2)
 to make it —the one who makes it 4C, pg. 5; ki-y5-ny ( (41-___) ->
    N1132-312) to get it -> a place where one gets it 9C, pg. 5.
     With Vtr21: ki-ci-kyəti-v-c ( (41-51-___)-> N1132-311-321) to cut
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the one who cuts it C, pg. 14.

The following are examples of transitive verbs occurring with 251.

With Vts211: tə51-v-> ((__-101-251) → N511) to sweat → a sweathouse

B, pg. 5; tə-tə51-v-> ((71.1-__-101-251) → N511) to sweat → a

sweathouse B, pg. 36.

With Vtsl12lbl: sə \acute{a} m-po ((__-251) \rightarrow Nllll) to close it \rightarrow a door-way 5C, pg. 5-6.

With V±313: 01-c5 ((__-251)→Nllll) to drink→a bar CA, pg. 9.

With Vts23: pú-k-o ((__-211-251)→Nllll) to put it in →a place
underground.

The following are examples of 251 with intransitive verbs. With Vis212al: $y\acute{a}-k-\hat{o}-n$ ((__-211-251) \rightarrow NIIII-312) to lie down \rightarrow a bed BS, pg. ll. $y\acute{a}-1-\hat{o}$ ((__-136-251) \rightarrow NIIII) to lie down \rightarrow a place underneath 9C, pg. 15; $y\acute{a}-k-\hat{o}-v$ ((__-211-251) \rightarrow NIIII-311) to lie down \rightarrow a bed DWT1, pg. 5; cuw $\acute{o}-k-\hat{o}-v$ ((__-211-251) \rightarrow NIIII-311) to stop \rightarrow a place to stop or Grand Canyon LS, pg. 13.

With Vir222: s-kwi-co ($(81-251)\rightarrow N1111$) to stand \rightarrow a shute PW, pg. 12.

The following are examples of occurrences of intransitive and transitive verbs with 252. With Visl2lb2: m-yú-wɔ ((32-__-252) -> Nllll) to be -> the place where you are C, pg. 20; yú-wɔ̂-k ((__-252-111) -> Nllll) to be -> the place where he is C, pg. 5; yú-wɔ̂-m ((_-252-112) -> Nllll) to be -> the place B, pg.31.

With Visl22a: nyi-smá-wô ((21-___-252)→ NIIII) to sleep→the place where he slept C, pg. 7.

With Vis212a3: ya-m-wɔ̂ ((__-112-252) \rightarrow N1111) to go \rightarrow the place where you go C, pg. 5.

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one that is soft CA, pg. 4-5; kú-məwə-m ( (41-__-112-234)- -
Nllll) to be warm —the spring C, pg. 10; ki-mú ( (41-__) —
Nllll) to be new \rightarrow the new one C, pg. 21; ka-mi·-c ( (41-__) \rightarrow
NIII1-321) to be tall \rightarrow the tall one C, pg. 5; ka-mi-ha ( (41-__) \rightarrow
   Nilli-313) to be tall with tall one C, pg. 7; ka-mi-n-c ( (41-
       N1111-312-321) to be tall \rightarrow the tall one C, pg. 5.
    With Vis221: k-tá:y ( (41-___) >> N53) to be old >> the old one
7C, pg. 10; k\hat{\mathbf{u}}-v-táy-k ( (41-53-___-211) \rightarrow N53) to be big \rightarrow the big
one BS, pg. 31; ku-v-táy ( (41-53-__) > N53) to be big \rightarrow the big
one 7C, pg. 1-2; ki-tá:y-v-c ( (41-___) - N53-311-321) to be old
** the old one 13J, pg. 7; ki-tá:y-v ( (41-___) >> N5)-311) to be
old the old one PDLS, pg. 1; ki-táy-c ( (41-___) > N53-321) to be
old \rightarrow the old one C, pg. 8; ki-tay-m ( (41-__-112) \rightarrow N53) to be
old -> the old one C, pg. 8; ki-tá:y-v ( (41-___)-> N53-311) to be
old the old one PDLS, pg. 1.
    41 with transitive verbs. With Vtsll162: ku-hwal-c ( (41-__) >
N1132-321) to plant the farmer C, pg. 11
    With Vts22lb: ku-wi-c ( (41-___) > Nll32-32l) to do -> the one who
 does it C, pg. 1; k-wi-cu-c ( (41-_-141) \rightarrow N1132-321) to do \rightarrow the
 ones who do it C, pg. 24.
    With Vts122a: ki-c-ky-a:y-vi-k ( (41-71.2-__-121-241.1)
    N2) to stand - the ones who stand HSL, pg. 4.
     With Vtsl21: ki-y5:- c ( (41-__-101) Nl132-321) to make it
    the one who makes it C, pg. 2; ki-yi:-v ( (41-_-101)\rightarrow N1D2)
 to make it - the one who makes it 4C, pg. 5; ki-y5-ny ( (41-__) - .
    N1132-312) to get it -> a place where one gets it 9C, pg. 5.
     With Vtr21: ki-ci-kyət i-v-c ( (41-51-___)-> N1132-311-321) to cut
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With Vis2l2al: $w\acute{a}-w\acute{9}$ ((__-252) \rightarrow Nllll) to sit \rightarrow the place where you sit 9JA, pg. 2.

With Vir222: s-kwi:-wo ((81-__-252)→N1111) to stand ——
the place where he stands C, pg. 5.

With Vts: mi-y5-wo ((32-Vtsl21-252)→Nllll) to find it the place where you find it C, pg. 10; nya-wi-wo ((21-Vts22lb-252)

Nllll) to do it the place where he does it C, pg. 27; wi-wo

((_-252)->Nllll) to do it the place where he does it C, pg. 6.

There were two examples of 253as a transformative: wá-yo

((Vtsl3-141-253) → Nllll) to sit a sitting place C, pg.3; má-ci-yo

((Vtsl3-141-253) → Nllll) to eat tables C, pg.31.

J21 occurred as a transformative in all of the possible affix sequences given for 40 and 250 in 15.1.1. With Vis2lib: kwé;w-c

((__-321) → Nilli) to talk → words~a meeting BS, pg. 19; qéli-a;y-vi-c

((Vis1l1-241.1-311-321) → N2 to be bad → the bad ones 4C, pg. 1;

vó-ki-c ((Vis122a-211-321) → Nilli) to walk → the walking C, pg. 7;

smá-ce ((__-321) → Nilli) to sleep → days B, pg. 23; wí-c

((Vis2lla-121) → Nill2) to own it → mine J3, pg. 4; swá-ce ((Vis2l2al-321) → Nilli) to sing → a song C, pg. 17; swá-ci-n-c ((__-141-312-321) → Nilli) to sing → the singing C, pg. 17. Compare this example with the one just above it. The sequence 312-321 sometimes has a gerund-like translation. yimá-ci-m-c ((__-141-312-321) → Nilli) to dance → the dancing C, pg. 18; m-yú-cú-c-ɛ ((32-Vis12lb2-141-321-233) → Nil32) to be → are you the one? C, pg. 44; yú-ci-n-c ((__-141-312-321) Nil32) to be → the ones 5J, pg. 9.

321 as a transformative occurring with transitive verbs: tə5:1-c

((Vts211-321) > N1132) to cook -> something cooked C, pg. 17; té-tə51-ci

((71.1-___321) → N1132) to cook → a cook C, pg. 11; tá-ta51-ci-m

((71.1-___321-112) → N1132) to cook → a cook C, pg. 11; tá-ta51-v-c

((71.1-___311-321) → N1111) to cook → the cooking C, pg. 21. tá
tə51-ci-n-c ((71.1-___-141-312-321) → N1111) to cook → all the cooking

C, pg. 17; luwé-c ((Vts1122-321) → N2) to marry → the one married

C, pg. 30; tinyú-tə-c ((Vts11b1-102-321) → N1111) to write → paper

or mail LS, pg. 9; tinyú-cə ((___321) → N1112) to copy → a teacher

C, pg. 5; yó-v-c ((Vts121-101-321) → N1111) to build → the one built

C, pg. 30; wi-cu-v-c ((Vts221b-141-311-321) → N1132) to do it → the one

who does it BS, pg. 25; hwá1-vi-c ((Vts111b2-311-321) → N1132) to

plant → a farmer C, pg. 11; hwá1-ci ((___-321) → N1111) to plant →

a crop PDLS, pg. 1; hwá1-ci-n-c ((___-141-312-321) → N1111) to

plant → all that which is planted DWT2, pg. 5.

In the preceding sections status-quo affixes 102,101, 111 and others occurred with transformatives. The formula for these sequences should read as follows: pú-ţi-v-c ((Vts23-102) -> Vts212-311-321) -> N1111) to fill it -> a hat C, pg. 59. That is, with these status-quo affixes there should have been at least two verb sub-classes represented in the formulas.

With 241.1 as a transformative there was only one V sub-class that occurred with it. In these occurrences of 241.1 the V was not pluralized: t-áy-ac ((Visl122-241.1)→N511-321) to play →the game C, pg. 1; t-ayə ((__-241.1)→N511) to play →the game C, pg. 1; mis-áy-v-cu ((__-241.1)→N53-311-321) to scare →the frightened one C, pg. 50.

In the corpus there is only one good example of 243. I am sure though that word order functions as a transformative in Havasupai: kalwi+sma-m ((Visl22a-112) -> Nllll) +nyivam+myacik how many days

did it take? PW, pg. 4. Here smá (to sleep, Visl22a) occurs without any transformative affix but becomes an N purely by word order.

15.2 The occurrences of N compounds in texts were more numberous than V or N compounds in citation or V compounds in texts. In addition three word N compounds occurred in texts and citation. There were no three word V compounds in texts or citation. All of the types of two word compounds that occurred in V occurred in N: types lb, 4, 5. (For descriptions of these types see 14.5.) Two word N compounds occurred in all the other types.

Types la, lb are illustrated below and show that the only way that these can be interpreted is by distinguishing them into two types.

Type la occurred with prefix and suffix transformatives. Form class sequence in la were: N-Vt, N-Vi, Vi-Vt. wi (stone) - hwal-k (to plant) ka-wis-hwali-m ((41-N512-Vtslllb2-234) -> N1132) one who plants stones -> a miner LS, pg. 12; nyánya nya (sun, time, day) al-k (to come up), tóp-k (to drop): nya-c-al-o ((N43-321-Vis212al-251) → N43) The place where the sun comes up → East BS, pg. 6nya-top-o ((#43-Vis212al-251)→ N43) the place where the sun goes down → the West PW, pg. 10. 5? (fire)-tu-k (to burn): 5-tú-i ((N43-Vtsl12la-251) > N43) The place where the fire burns > a stove 5C, pg. 5. This compound occurred without 251 as o-tú-nyi-1 ((N4)-Vtsll2la) -> N43) 5C, pg. 7; nya (day, sun, time) tu-k (to burn): nyánya-tú-i-m ((N43-Vtsl12la-251-234) 7 Nllll) time when the day burns - Summer DWT1, pg. 16; waksi (cow~cattle) - vənu-kə (to graze): wdksi-vənu-we ((N4) Vtsi4-252) N43) The place where the cows graze →pasture SR, pg. 10; wa-k (to sit) -yo-k (to get):wa-yó:-wo ((Vis212al-Vts121-252)-N511) A place to get to sit in or live in ----

a house 5J, pg.). (Compare the section on Vi compounds where wa-y5-k (Vis-Vts) -> Vis means to live. Here occurring with 252 in la and below with 41 in lb the same form class sequence means house.) ha?a (water)-su-k (green-blue):há-və-sú-w> ((N43-53-Vis222-252) -> N1132) place of the blue-green water -> Supai SR, pg. 1.

Form class occurrences in type lb were N-Vt, Vi-Vt, N-Vi. mat (dirt-land)-vaso-k (to guard):mat-ku-vs5-n-c (N412-(41-Vtsllth) N1132) -N1132-312-321) One who guards the land -> Forest Ranger 4C, pg. 4; wa-k (to sit)-yo-k (to get) wd-ki-y5-c (Vis212al- (41-Vts121 → N1132) → N511-321) A place one gets to sit in → a house DWT2, pg. 1; N1132) N1132) place where water is gathered -> Peach Springs (a place name) CA, pg. 2; θəpál (peach) -kwaθə (yellow~brown): θəpál-kakwá θ i-ny (N411- (41-Vis222 \rightarrow N1111) \rightarrow N411-312) one that is a yellow peach - an apricot 6C, pg. 18; θεq (leaf) -tay (old): θέ-ku-v-táy (N511 (41-53-Vis221 \rightarrow N11)2) \Rightarrow N511) the old leaf \Rightarrow fig 6C, pg. 6; wi?i (Stone)-man-ka (to fall):wi-kimoni-k (N512- (41-Vis122b2-211 -> N1132) -> N1132) the place where the stones fall -> Valentine (a place name) LS, pg. 9; ko?o (pinion tree)-hwal-k (to plant):ko-ka-wal-ka (N52-(41-Vtsl11b2-211->N1111) ->N1132) a place where the pinion trees are planted -a place name LS, pg. 6; miyal (red) -sli:-k (to roast): miyál-k-slí:-vi-m (N411 (41-Vts122b-121-234 → N411) → N411) fry-bread 9C, pg. 11.

Now the only possible way of interpreting the different sequences in which 41 and 250 occur in types la, and lb here, is that in type la the two words in the compound remain a phrase and do not become a single word until occurring with 41 or 250. In the first example in type la

did it take? PW, pg. 4. Here smá (to sleep, Visl22a) occurs without any transformative affix but becomes an N purely by word order.

15.2 The occurrences of N compounds in texts were more numberous than V or N compounds in citation or V compounds in texts. In addition three word N compounds occurred in texts and citation. There were no three word V compounds in texts or citation. All of the types of two word compounds that occurred in V occurred in N: types lb, 4, 5. (For descriptions of these types see 14.5.) Two word N compounds occurred in all the other types.

Types la, lb are illustrated below and show that the only way that these can be interpreted is by distinguishing them into two types.

Type la occurred with prefix and suffix transformatives. Form class sequence in la were: N-Vt, N-Vi, Vi-Vt. wi (stone) - hwal-k (to plant) ka-wia-hwali-m ((41-N512-Vtslllb2-2)4) - N1132) one who plants stones a miner LS, pg. 12; nyánya nya (sun, time, day) al-k (to come up), top-k (to drop): nya-c-al-o ((N43-321-Vis212al-251) - N43) The place where the sun comes up East BS, pg. 6nya-top-o ((M43-Vis212a1-251) > N43) the place where the sun goes down → the West PW, pg. 10. 5?5 (fire)-tu-k (to burn): 5-tú-i ((N43-Vts112la-251) N43) The place where the fire burns a stove 5C, pg. 5. This compound occurred without 251 as p-tú-nyi-1 ((N4)-Vts1121a) N43) 5C, pg. 7; nya (day, sun, time) tu-k (to burn): nyánya-tú-i-m ((N43-Vtsl121a-251-234) 7 NIIII) time when the day burns - Summer DWTl, pg. 16; waksi (cow cattle) - vanu-ka (to graze): waksi-vənu-wə ((N43-Vtsi4-252) N43) The place where the cows graze -> pasture SR, pg. 10; wa-k (to sit) -yo-k (to get):wa-y5:-wo ((Vis212al-Vts121-252)-N511) A place to get to sit in or live in

then the sequence "he plants rocks" is bound together into a compound by the occurrence of 41. In type 1b the occurrence of 41 has nothing to do with the making of the compound in the sense of type 1a since there are VV, NN, NV compounds in type 5 in which the N is not a transformed V. Types 1a, 1b, 5 contrast with respect to their formations which is dependent upon where and if 41 and 250 occur. In type 1b the occurrence of 41 appears to be just another way of forming compounds that could be done much simpler without 41. The same could be said for type 1a. What use these occurrences of 41 and 250 have here is not apparent to me. It is obviously more grammatically economical or simple for them not to occur. That o-tú-i in type 1a can also occur in type 5 without 251 and tinyú-t-ú-k can occur in type 3 but also type 4, indicates that the occurrences of 250 here is grammatically redundant, but may be a lexical marker of some kind.

Only a Vtrlll occurred in type 2a in the sequence N-Vtr:i?i (wood)-suv-ko-k (to fence):i-so-kó-yo ((N411- (81-R-Vtrlll))-253-N411) wooden fence SR, pg. 5.

Vis2l2al-25l→Nllll)-(Vts122b))→Nllll) the place where something stops that takes one away→Grand Canyon Railway Station 4C, pg. l

Type three sequences include only one Vis-Vis. tinyú-ţi-k (to write)-u-k (to see):tinyú-t-ú:-co-l ((Vts2122-102 -- Vts111bl)-(Vis212al))

-251) -> N1132-136) a school BS, pg. 13.

Example of type sequence where two words occurred with formatives and where only one word was transformed: tinyú-ţi-k (to write)
-wa-m-k (to take away):nyú-k-wá-m ((Vts2122-102 -> Vts1145)-(41
(Vis212al-112 -> Vis212al) -> N1132) -> N1132) One that takes away the
writing -> Mail carrier 4C, pg. 8.

Type 4 sequences include N-Vtr, Vts-Vts, Vis-Vis. ha?a (water)tuv-ko-k (to block):hā-tuv-kó:-nyə (N4]-(8]-R·→Vtrlll) → Nll32-J2)
a dam SR, pg. l]; tinyú-tə-k (to write)-u-k (to see):nyú-tə-ú:-ci-m
((Vts2122-102 → Vtsllbl)-(Vis212al-141-234) → Nll32) a school LS, pg. 9;
kwəw-k (to talk)-u-vi-k (to show):kwəw-ú-vi-m ((Vis212al)-(Vis212al101 → Vis212al-234)→ Nllll) a council meeting BS, pg. 19.

Type 5 sequences include N+(Vi, Vtr, N,), Vi+Vi, Vtr. N+N:

háyku (white man)-múlvo-v (boss~chief): (N43-N42) →N42-JII) U.S.

Government DWTi, pg. 2; ców (canvas)-wó-v-c (house): (N43-N511

→ N511-311-321) a tent DWT1, pg. 4. N-Vi: kwû (metal~knife)-táto (to

be rough): (N1112-Vis222→N1112) barbed wire SR, pg. 9; wilo (grass)
kwá6 (yellow~brown): (N43-Vis222→N43) gunny sack 5C, pg. 5. A re
duplicated N in N-Vi: kwûm-kwá (metal~knife)-qéc (small): (N1112-242
N1112-Vis111→N1112) real little metal →a spoon 9C, pg. I; háyku

(white man) kbów-k (to talk): (N43-Vis211b-211→N1111) English BS,

pg. 3); hû (water)-taví-ny (intensifier): (N43-Vis222→N43-312) whiskey

N-Vts: pá (man~indian~people)-tiyú-k (to gather); (N1132-Vts2122-211)

→ N1132) relatives 4C, pg. 8; kô (pinion tree)-to-lápa-1 (to flatten):

(N52-71.1-Vts111b1→N1132-136) a place name LS, pg. 6; wû (house)
soát (to sell): (N512-Vts13→N512) a store BS, pg. 25. Vi-Vts:

nyimsáv (white)-táptáp-o-n (to flatten): ((Vis222)-(Vts111a2-161)

N1132-312) tortillas 9C, pg. 13. Vi-Vi: cáci (to step)-táy-k (old): ((Vis212al) - (Vis222-211) > N1132) step-father J3, pg. 2.

Examples of Nól as first members in a compound: kwéə (something)-nyō-ci-m (to be black): ((Nól-(Vis222-J21-2J4) -N11J2) a

Navaho rug 7C, pg. 10; kwéə (something)-sli:::ny (to roast): (Nól-Vts122b -> N1111-312) a frying pan 9C, pg. 9; kwéə (something)-ny-á:y-k

(to hunt): ((Nól)-(Vts-1122-241.1-211) -> N11J2) hunters B, pg. 10;

kwéə (something)- vi-yá-m-k (to run): ((Nól)-(62-(loc-112 ->

Vis212a3) -> Vis122b1 -> N1111) something that runs -> a car PW, pg. 5.

Sequences with N62 are: ka (what) - v-yú-ci-v-c (to be): (N62-54-Visl2lb2-141 -> N1132-311-321) things or somebody J3, pg. 1.

Three word compounds were combinations of types la, 3; la and 2a and also types lb and 5. Types la and 3: i?i (wood)-suv-ko-k (to fence)-s-ca-k (to put up posts): î-sə-kó-yə-s-có-ny ((((N411-(82-R -> Vtrlll))-253 -> N1132)-(81-Vts23 -> Vts2121) -> N411-312) Fence posts

DWT2, pg. 2; sal (hand)-ts-k (big)-hwa (two):sal-k-té-kə-hwakə

(N112-(41-Vis221-211-Num-> N1111) -> N112) hands with two big ones -> Two

Thumbs (a proper name) 12 J, pg. 1.

Examples of types la and 2a: pa (man~indian~people)- pi-k (to die)-c-kwa-k (to put it in):pa-pu-c-kwa-c-l ((N1132-(Vis212b-241.2)-(51-R -> Vtr212))-251-> N1132-136) A place where they put dead men -> a hospital 1C, pg. 2.

An example of type 5 is: pa (man~indian~people)- nyanya (to be black)-wa-k (to live): pa-nyanya-wa-k (((NII32-Vis222-(Vis212al-211)))

NII32) the place where the black man lives—Phoenix IC, pg.3.

An example of type lb is: wi?i (stone)-ha?a (water)-nəpa-k (to come down):wi-ha-ki-npa-ca-c (N512-N43(41-Vis212al-> N1111)-> N1132-

 $-251) \rightarrow N1132-136)$ a school BS, pg. 1%.

Example of type) sequence where two words occurred with formatives and where only one word was transformed: tinyú-ţi-k (to write)
-wa-m-k (to take away):nyú-k-wá-m ((Vts2122-102 -> Vts1145)-(41
(Vis212al-112 -> Vis212al) -> N1132) -> N1132) One that takes away the
writing -> Mail carrier 4C, pg. 8.

Type 4 sequences include N-Vtr, Vts-Vts, Vis-Vis. ha?a (water)tuv-ko-k (to block):hâ-tuv-k5:-nyə (N43-(83-R· → Vtrlll) → Nll32-372)

a dam SR, pg. l?; tinyú-ţə-k (to write)-u-k (to see):nyú-ţə-ú:-ci-m
((Vts2122-102 → Vtsllbl)-(Vis212al-141-234) → Nll 2) a school LS, pg. 9;
kwəw-k (to talk)-u-vi-k (to show):kwəw-ú-vi-m ((Vis212al)-(Vis212al101 — Vis212al-234)→ Nllll) a council meeting BS, pg. 19.

Type 5 sequences include N+(Vi, Vtr, N,), Vi+Vi, Vtr. N+N:
háyku (white man)-múlvə-v (boss~chief): (N43-N42) >N42-Jil) U.S.
Government DWTi, pg. 2; ców (canvas)-wó-v-c (house): (N43-N511

N511-311-321) a tent DWTi, pg. 4. N-Vi; kwû (metal~knife)-tótə (to be rough): (N1112-Vis222-N1112) barbed wire SR, pg. 9; wilə (grass)-kwóð (yellow~brown): (N43-Vis222-N43) gunny sack 5C, pg. 5. A reduplicated N in N-Vi; kwûm-kwó (metal~knife)-qéc (small): (N1112-242-N1112-Vis111-N1112) real little metal-la spoon 9C, pg. I; háyku (white man) kwów-k (to talk): (N43-Vis211b-211-N1111) English BS, pg. 33; hû (water)-tavi-ny (intensifier): (N43-Vis222-N43-312) whiskey N-Vts: pá (man~indian~people)-tiyú-k (to gather); (N1132-Vts2122-211)

N1112) relatives 4C, pg. 8; kô (pinion tree)-tə-lápa-l (to flatten): (N52-71.1-Vts111bl-N1132-136) a place name LS, pg. 6; wû (house)-soát (to sell): (N512-Vts13-N512) a store BS, pg. 25. Vi-Vts: nyimsáv (white)-táptáp-o-n (to flatten): ((Vis222)-(Vts11a2-161)

141-321) the place where the water comes down over the stones — Flagstaff PD, pg. 2.

In citation only types 1b and 5 occurred. All sequences of form classes and sub-classes that occurred in texts occurred in citation except the following three stem compound in type 5: ha?a (water)-va-su-k3 (green~blue)-pay (men): há-va-sú-pay (N43-(53-Vis222)-N1132 > N1132) People of the blue-green water - Havasupais C, C.

16. P are defined as that form class which is incompatible with diagnostic slots A and B for V and N respectively and do not have any diagnostic affixes with which they exclusively occur.

The first major sub-division is Pl, those which occur with affixes, and P2, those which are incompatible with affixes. Some members of P2 are: há future interrogative particle BS, pg. 25-26; mí or B, pg. 22; tú just B, pg. 18; é?s affirmative particle C, pg. 2; ma interrogative particle C, pg. 29; ps interrogative particle C, pg. 22; túcuv almost C, pg. 6; kák negative particle 12J, pg. 2.

The affixes which may occur with Pl are all inflectional affixes in groups 1 and 3 described for V with the restrictions on co-occurrence for these affixes given in the V section. In addition divisive and statusquo affixes 54, 121, 110, 136, 71.1, 71.2 may occur with Pl. It should be understood that except for single divisive affixes which occur in Pl all other sequences exemplified for any sub-class of Pl occurs with all sub-classes of Pl even though these other sub-classes may not be illustrated. Similarly a non-divisive sequence with a divisive affix occurs with all members of that sub-class occurring with that divisive affix even though other sub-classes occurring with that divisive affix is not illustrated.

N1132-312) tortillas 9C, pg. 15. Vi-Vi: cáci (to step)-táy-k (old): ((Vis212a1) - (Vis222-211) * N1132) step-father J3, pg. 2.

Sequences with N62 are: ka (what)- v-yú-ci-v-c (to be): (N62-54-Visl2lb2-141-N1132-311-321) things or somebody J₂, pg. 1.

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DWT2, pg. 2; sal (hand)-tɛ-k (big)-hwa (two):sal-k-té-kə-hwakə

(N112-(41-Vis221-211-Num-> N1111) → N112) hands with two big ones → Two

Thumbs (a proper name) 12 J, pg. 1.

Examples of types la and 2a: pa (man~indian~people)- pi-k (to die)-c-kwa-k (to put it in):pa-pú-cə-kwa-cə-l (((N1B2-(Vis212b-241.2)-(51-R > Vtr212))-251 > N1B2-B6) A place where they put dead men - > a hospital IC, pg. 2.

An example of type 5 is: pa (man~indian~people)- nyanya (to be black)-wa-k (to live): pa-nyanya-wa-k (((Nll32-Vis222-(Vis212a1-2ll))

Nll32) the place where the black man lives-> Phoenix 1C, pg. }.

An example of type lb is: wi?i (stone)-ha?a (water)-n3pa-k (to come down):wi-há-ki-npá-ca-c (N512-N43(41-Vis212al-* N1111)-> N1132-

16.1 The first sub-division in Pl is syntactic: Pl which invariably follow V are Pll and all those P which invariably precede V are Pl2. Examples of Pll are: inyά-c+hmέ-hα + ci-qám +hamát-k-wi (Nl2ll-32l + N2-3l3 + 5l-Vts22l + Pl1-2ll-22l) I can hit the boy C, pg. 12; inyá-c + vi-yá-m + kwál-?-yu (Nl2ll-32l + 62-Visl22bl-1l2 + Pll-18l-222) I want to run C, pg. 12; inyá-c + vi-yá-m + vát-vu-k (Nl2ll-32l + 62-Visl22bl-1l2 + Pll -12l-2ll) I am still running C, pg. 12. Examples of Pl2 in this syntactic slot will be given later.

Pll is divided into Plll (+121) and Pll2 ()(121). Depending upon the V they follow, Vt or Vi, Plll and Pll2 occur with either 221 or 222. See examples in Plll below. Although only the gloss of the Pll and Pl2 is given here it should be understood that either the Pll or Pl2 is following a V and then e.g. the gloss also means also V-ing jor it is occurring without a V. In this latter occurrence no sub-class of P may occur in diagnostic slot A for all V.

Examples for Plll follow: kwút; i-vi-m (Plll-121-234) also J3, pg. 2; kwút; tu-v (__-121) Also BS, p. 11; kwút-vi-t (__-121-151) also 9C, pg. 14; kwút-vu-k (__-121-211) also 6C, pg. 6; kwútu-k (__-211) also J3, pg. 15; kwút-vi-k-yu (__-121-211-222) he is also C, pg. 4; kwút; a-v-k-wi (__-121-211-221) also C, pg. 4; kwút; a-v-k-wi-nya (__-121-211-221) also C, pg. 4; kwút; a-v-k-wi-nya (__-121-211-221-235) also C, pg. 26; kwút; a-k-yú-nya (__-211-222-235) also C, pg. 14; hi-v-ca (__-121-141) They must C, pg. 20; múti-m (__-122) he can BS, pg. 17; mútu-v-c (__-121-141) they are able C, pg. 12; múti-yu (__-222) he can DWTl, pg. 5; humúti-k-yu (__-211-222) he can PW, pg. 2; humúti-ts (__-232) I can C, pg. 22; mú-?-wi (__-181-221) I can C, pg. 24; mút-hu-ws (__-171-236) will I be able? C, pg. 2; mú-? (__-181) I am able C, pg. 10.

In citation only types 1b and 5 occurred. All sequences of form classes and sub-classes that occurred in texts occurred in citation except the following three stem compound in type 5: ha?a (water)-va-su-k3 (green blue)-pay (men): há-va-sú-pay (N43-(55-Vis222)-N1132 N1132) People of the blue-green water Havasupais C, C.

16. P are defined as that form class which is incompatible with diagnostic slots A and B for V and N respectively and do not have any diagnostic affixes with which they exclusively occur.

The first major sub-division is Pl, those which occur with affixes, and P2, those which are incompatible with affixes. Some members of P2 are: há future interrogative particle BS, pg. 25-26; mí or B, pg. 22; tú just B, pg. 18; é?s affirmative particle C, pg. 2; ma interrogative particle C, pg. 29; ps interrogative particle C, pg. 22; túcuv almost C, pg. 6; kák negative particle 12J, pg. 2.

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Pll2 is divided into Pll21 (+71.2) and Pll22 ()(71.2). Examples of Pll22 are: cáti-kí-ny (__-211-235) almost J3, pg. 1; cáti-k (__-211) almost CA, pg. 5; cáti (___) almost CA, pg. 5.

Examples of Pll21 are: ci-kwáli-yu (71.2-___-222) they want it PW, pg. 18; kwáli-c (__-141) they want it BJ, pg. 9; kwáli-yu (__-222) he wants it BS, pg. 8; kwáli-k (__-211) he wants it C, pg. 27; kwáli-k-yu (__-211-222) he wants it C, pg. 19; kwáli (____) he wants it C, pg. 19.

Examples of Pl2 in the syntactic slot preceding V can be given in one example in which most of the members of Pl2 occur with a member of Pl1 which follows the V: kak + vam + yak + snyúk + cal + ya-mi-t + kwali-k-yu (Pl2...+Vis2l2a\cdot-112-232 + Pl12l-21l-222) I don't want to go on top again this morning C, pg. 18. This example was directly elicited, is admittedly artificial and probably would never occur in text or indirect eliciting. However, it does represent the orders for Pl2 and Pl1 with respect to the V which was found for individual members of the. Fub-classes throughout the corpus in texts and indirect eliciting.

Pl2 is divided into Pl21 (+136) and Pl22 ()(136). Pl21 is divided into Pl211 (+121) and Pl212 ()(121).

Examples of Pl211 are: yá·-1 (__-136) in here. (this base is the base for the verb ya-m (Viz212a) to go and other verbs formed from this base as exemplified in 14.1.1.) viyá-v (__-121) over here BS, pg. 12-13; yá-k (__-111) here BS, pg. 35-36; yá-1-k-yu (__-136-211-222) he is in here BS, pg. 23; yá-m (__-112) here SR, pg. 19. (This last example shows 112 as an inflectional suffix. In other occurrences with the same base the gloss is to go (Vis212a3).) yá-ki-k-yú-nyə (__-111-211-222-235) he was here C, pg. 4; cá:-1 (__-136) on top

C, pg. 26; cá:-v (__-121) he is on top 5C, pg. 1; cá:-m (__-112) on top 5C, pg. 4; cá:-k (__-111) on top 9C, pg. 5; cá-1-yu-m (__-136-222-234) he is on top C, pg. 3; cá-1-k-yu (__-136-211-222-rising intonation) is he on top? C, pg. 3; cá-1-k-yu-we (__-136-211-222-236) was he on top? C, pg. 3; nyú-k (__-111) there 7C, pg. 1; nyú-m (__-112) there HSL, pg. 12; nyú-l (__-136) in there 7C, pg. 4; nyu-ve-v-k-yú-we (__-121-211-222-236) was it over there? C, pg. 2.

Examples of Pl212 follow. (The base in the first example occurs in two sub-classes: with 234 in P12221 as vo-m now and with 136 in P1212 as va-1 here. This is also the same base that occurs with 111 and 112 as Vis212al to arrive and to come home. I am identifying this base as the same in all these sub-classes because it has the same phonemic shape and because of the lexical similarity in base's occurrences with these affixes. It is possible that since it is occurring in two sub-classes in P, also with two different glosses; 234 and 136 function here as statusquo affixes. Also the base 0a- which follows va- here also occurs in P12221 with 234 and here in P1212 with 136.) vá-kə (__-lll) here DWTl, pg. 4; vá-1 (__-136) in here C, pg. 6; vá-m (__-112) here CA, pg. 4; θά-k (__-111) there CA, pg. 4; hά-l (__-116) in there DWTl, pg. 12; há-m (__-112) there 5C, pg. 2; máki-1 (__-136) in the back B, pg. 1-2; mák-əm (___-112) in the back BS, pg. 28; mák (___) in the back SR, pg. 11. This base occurred with 251 to go to an N; mak-3-nyə (___-251 \rightarrow N42-312) the back (the part of the body) C, pg. 28.

Pl22 is divided into Pl221 (+121) and Pl222 ()(121). Pl221 is divided into Pl2211 and Pl2212 syntactically. Pl222 is divided into Pl2221 (+234,)(112,193) and Pl2222 (+112)(234,193). The following sub-class overlaps into Pl2221 and Pl2222 because it occurs with 234 and 112. This

Pll2 is divided into Pll2l (+71.2) and Pll22 ()(71.2). Examples of Pll22 are: cáti-kí-ny (__-2ll-235) almost J3, pg. l; cáti-k (__-2ll) almost CA, pg. 5; cáti (__) almost CA, pg. 5.

Examples of Pll2l are: ci-kwáli-yu (71.2-__-222) they want it PW, pg. 18; kwáli-c (__-14l) they want it l3J, pg. 9; kwáli-yu (__-222) he wants it BS, pg. 8; kwáli-k (__-2ll) he wants it C, pg. 27; kwáli-k-yu (__-2ll-222) he wants it C, pg. 19; kwáli (__) he wants it C, pg. 19.

Examples of Pl2 in the syntactic slot preceding V can be given in one example in which most of the members of Pl2 occur with a member of Pl1 which follows the V: kak + vam + yak + snyak + cal + ya-mi-t + kwali-k-yu (Pl2...+Vis2l2a)-1l2-232 + Pl12l-2l1-222) I don't want to go on top again this morning C, pg. 18. This example was directly elicited, is admittedly artificial and probably would never occur in text or indirect eliciting. However, it does represent the orders for Pl2 and Pl1 with respect to the V which was found for individual members of the sub-classes throughout the corpus in texts and indirect eliciting.

Pl2 is divided into Pl21 (+136) and Pl22 ()(136). Pl21 is divided into Pl211 (+121) and Pl212 ()(121).

Examples of Pl2N are: yá···l (__-136) in here. (this base is the base for the verb ya-m (Vis212a)) to go and other verbs formed from this base as exemplified in 14.1.1.) viyá-v (__-121) over here BS, pg. 12-13; yá-k (__-111) here BS, pg. 35-36; yá-1-k-yu (__-136-211-222) he is in here BS, pg. 23; yá-m (__-112) here SR, pg. 19. (This last example shows 112 as an inflectional suffix. In other occurrences with the same base the gloss is to go (Vis212a3).) yá-ki-k-yú-nyə (__-111-211-222-235) he was here C, pg. 4; cá:-1 (__-136) on top

sub-class can occur with 193but P1221 and P1222 do not occur with 193. I could class the sub-class which occurs with 193 in either one of these two sub-classes. However, I am making it a separate sub-class from these and marking it P1222a.

Examples of the division of P1221 into P12211 and P12212 syntactically will not be given here. Only examples of the morphological divisive feature for P1221 (+121) will be given.

Examples of Pl2ll follow: tiyά:-v (__-12l) in that direction

DWTl, pg. 16; tiyá-v-k-yu (__-12l-2ll-222) rising intonation) is it

in that direction? C, pg. 9; tiyá-v-k-yú-wε (__-12l-2ll-222-236)

Was it in that direction? C, pg. 9; tiyá-k (__-1ll) in that direction C,

pg. 40. The following base also occurs in Pl2221 with 234. As with the

base va exemplified above in Pl212, 234 appears to function here as a

status-quo. kút i-m (__-1l2) far away BS, pg. 32; kút i-v (__-12l)

far away BS, pg. 5; kút (__) far away SR, pg. 4; ɔyá-v (__
-12l) outside C, pg. 5; ɔyá-hi-k-yu (__-17l-2ll-222) it will happen

outside C, pg. 5.

Examples of Pl2212 follow. (Pl2212 will also have to be divided syntactically. It is possible that all of these P sub-classes which have to be divided syntactically will end up as one member classes.) ká:y

(_____) different 5C, pg. 7; ká:y-m (____-112) different DWT2, pg. 2a; ká:y-v (___-121) it is different J3, pg. 4; tiyá-v (___-121) it is together BS, pg. 7; tiyá-k (___-211) together 9JA, pg. 2; snyú-v (___-121) it is happening again CA, pg. 7; snyú:-c (___-141) they repeated it PW, pg. 9; snyú-v-c (___-121-141) they repeated it PW, pg. 1; snyú-k (___-211) again DWT2, pg. 11; snyú:-m (__-112) again BS, pg. 5; píti-v (__-121) it is the only thing LS, pg. 20;

piti-k (___-211) only PW, pg. 17; pita-c (___-141) they are the only ones 12J, pg. 1; pits (___) only 4C, pg. 5. Examples of P12221 follow: yaki-m (___-234) morning DWT1, pg. 10; y=:k-ti-k (__-151-211) early in the morning HSL, pg. L; nyi-yə:ki-m (21-___-234) when it's morning B, pg. 17-18; yə:k-tik-yú-nyə (___-151-211-222-235) it was yesterday morning C, pg. 5; yəki-m-k-yu (__-112-211-222) all night C, pg. 2; kútə (___) long ago CA, pg. l; kút i-m (___-234) long ago CA, pg. l; há-m (___-234) then PW, pg. 1; hd (___) then there B, pg. 7. (Exactly which gloss ha has here, then there, and which gloss (locative-time) any of the bases mentioned above have, which participate in two P subclasses, is dependent upon occurrences with 234, 136, 112 or other such affixes. When these bases occur unaffixed, the gloss they have cannot be marked syntactically since whether the gloss is locative or time the base may occur in the same syntactic slot. Therefore, there must be some extra-linguistic rule outside of the grammar which marks what gloss these bases will take when unaffixed.) vá-m (___-234) now PDLS, pg. 5; twá·y-m (__-234) later 6C, pg. 4; twá:y-ci-nyu (__-141-235) we were a long time DWTl, pg. 1; twóy (___) later 9C, pg. 1; nyi-twá:y-m (21-___-234) when it's later DWT2, pg. 10; twáym-wε (__-234-236) did he stay? C, pg. 1; twdy-k-θɔ (__-211-231) if you are late C, pg. 7. Examples of Pl222a follow: hwaki-0ə-m (__-193-234) only two PDLS, pg. 6; hwáka-m (__-112) two 1C, pg. 44; hwák-ta-m (___ -151-234) they were two LS, pg. 17; hwaki-k (___-211) two 9JA, pg. 1; hwák-θi-k (__-193-211) only two 9C, pg. 8-9; hwá:k-ci-k (__-141-211) those two things 5J, pg. 2; hwak-ti-k (___-151-211) you were together C, pg. 1; hwák-ti-k-yû (___-151-211-222-rising intonation) is it both of them? C, pg. 17; hwák-ti-k-yú-wε (___-151-211-222-236) was it both of them? C, pg. 17; ma-hwak-yu-we (32-___-222-236) who went with you? C, pg. 17; ma-hwak-ti-k (2-__-151-211) you were together C, pg. 51; hwá:k-ci-k (__-141-211) they are two 5J, pg. 2; hw6ki-ci-m (___-141-331) with two of them 5J, pg. 1; ma-hwák-te (32-__-232) don't be together C, pg. 47. This base was transformed to an N when occurring with 41: ka-hwaka-c (41-___ N42-321) the two C, pg. 7; siti-m (__-112) one SR, pg. 15-16; sita-θa-m (__-193-234) only one HSL, pg. 9; siti-k (___-211) one B, pg. 19; sita-m-c-2-k (___-112-141-161-211) they scattered us DWT1, pg. 15a; sit-o-k (__-161-211) they scattered us 9C, pg. 1-2; sit-mə-k (___-112-211) one 7C, pg. 1; tə-sitə-0i-k (71.1___-193-211) they do it only once HSPD, pg. 5; siti-k-yu (__-211-222-rising intonation) is it each one? C, pg.3; siti-k-yú-we (__-211-222-236) was it each one? C, pg. 13; ma-sit (32-___) you are alone PW, pg. 18-19. This morpheme was transformed to an N with 321: (___-321-151-211 -> N42) after one day 7C, pg. 6. Another member of this class which was transformed to an N with the occurrence of 41: k-hopá-m (41-_____ N42-112) the fourth one 8C, pg. 7.

Examples of Pl2222 follow: towi-m (__-112) some of it 6C,

pg. 7; páta-m (__-112) hard B, pg.31. This base also occurs with

321 and was transformed to an N: páti-c (__-321 -> N42) those that

are hard J3, pg. 9.

16.1.1 The only compounds in P were where the resultant was in the classes of P12221 and P2. The form classes involved in these

compounds were N-V, P-N, N-N. Compounds in Pl2221 follow: nya-n (sun~time~day) - tqépi-m (evening): (N43-312-Pl2221-234 → Pl2221) tonight 6C, pg. 7; va (this) - nya-vi-m (sun~day~time): (N122-(N43-311) → Pl2221-234) today C, pg. 7; make (back) - nya-vi-m (sun...): (Pl212-(N43-311) → Pl2221-234) yesterday C, pg. 4; nya-n (sun...) - tópi-m (to fall): ((N43-312)-Vis212al → Pl2221-234) evening 6C, pg. 7; nya-nyu (sun...) - wa-m (to pass by): ((N43-312-(Vis212al-112 → Vis212al) → Pl2221) day time PDLS, pg. 7; nya-(sun...) - luwi-və-m (to be the same): (N43-(Vis211b-121) → Pl2221-234) noon C, pg. 9.

The compound in P2 follows: $k\hat{a}$ (what) - $v\hat{s}$ -law-i-m (it is the same): (N62-(Vis211b-112) \rightarrow P2) how many? C, pg. 52.

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compounds were N-V, P-N, N-N. Compounds in Pl2221 follow: nya-n (sun~time~day) - tqśpi-m (evening): (N43-312-Pl2221-234 - Pl2221) tonight 6C, pg. 7; va (this) - nya-vi-m (sun~day~time): (N122-(N43-311) -> Pl2221-234) today C, pg. 7; mákə (back) - nya-vi-m (sun...): (Pl212-(N42-311) -> Pl2221-234) yesterday C, pg. 4; nya-n (sun...) - tɔśpi-m (to fall): ((N43-312)-Vis212a1-> Pl2221-234) evening 6C, pg. 7; nya-nyu (sun...) - wa-m (to pass by): ((N43-312-(Vis212ai-112 -> Vis212a1) -> Pl2221) day time PDLS, pg. 7; nya (sun...) - luwi-və-m (to be the same): (N43-(Vis211b-121) -> Pl2221-234) noon C, pg. 9.

The compound in P2 follows: ka (what) - vé-lew-i-m (it is the same): (N62-(Vis211b-112) - P2) how many? C, pg. 52.

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