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AVATIME NOUN CLASSES AND CONCORD*

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Avatime is one of 14 "Central-Togo" (or "Togo Remnant") languages, spoken in Ghana, Togo, and Benin. These languages differ from their nearest Kwa group relatives in that they have active systems of noun classes and concord. Avatime has 13 noun classes, each with a distinct nominal prefix. Prefixes (as well as most other affixes) agree in [ATR] vowel harmony with the host noun root. Some classes impose invariable low tone on the prefix while prefix tone of other classes may be any of three lexically determined tones. Definiteness is marked by a set of suffixes. The ultimate segmental shapes and tones of these suffixes depend on the interaction of the respective class prefix shapes and coalescence phenomena with stem final vowels. There are correlations between noun class and nominal semantics, and nominal derivation is done in part through class choice. A number of attributive modifiers show class concord with the head noun. In the variety of Avatime studied here, such concord is only though vocalic prefixes on attributive modifiers, not by full CV prefixes as is typical of Bantu languages. Some attributives also have "tonal concord", which is not class concord per se, but refers to the tone of the head noun's prefix. Not all attributive modifiers have overt concord marking.

1. Introduction

Avatime is one of 14 languages referred to as "Central-Togo" languages in Kropp Dakubu and Ford [1988]. Most earlier literature on these languages uses the term "Togo Remnant Languages" in English or "Togorestsprachen" in German. These languages are spoken east of Lake Volta in Ghana, in contiguous areas of

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Togo, and in the case of one language, Basila, in Benin. Greenberg [1966] classifies the Central-Togo languages together with Ewe, Akan, Gã, and a number of other languages as the "b" subgroup of his "Kwa" group. Stewart [1989:221] refines the classification within this subgroup, proposing that the Central-Togo languages are not a genetic unit. Rather, some of these languages, including Avatime, are in the "Left Bank" sub-group, which includes Ewe, whereas others are in the "Nyo" sub-group, which includes Akan, Gã, and Baule. The most extensive comparative study of the Central-Togo languages as a group is Heine [1968]. The main works specifically on Avatime are Funke [1909, 1910], Kropp [1967], and Ford [1971a, 1971b].

What has struck researchers about the Central-Togo languages from the earliest times is the fact that they have active noun class systems utilizing prefixes and concord much like the Bantu languages. This is in contrast to the languages which are their closest linguistic relatives, where lexical noun class and concord systems are entirely absent. This paper will present some of the features of Avatime noun classes and concord system.

2. Phonological Preliminaries

In this section I provide just an inventory of the features of Avatime phonology which explain the transcription I use and/or which are of particular interest for the noun class and concord system. See Schuh [1995] for a more extensive description of Avatime phonology, including evidence and arguments for some of the more problematic facets of the phonological system.

2.1. Consonants

Table 1. Avatime consonants

	Bilabial	Labio-dental	Dental	Alveo-palatal	Velar	Labiovelar
Stops	p, b		t, d		k, g	kp, gb
Fricatives	(ʃ), ʋ	f, v	s, z		x, ɣ	xw, ɣw
Affricates			ts, dz			
Nasals	m		n	ny	ŋ	ŋw
Liquid(s)			l [l/r]			
Semivowels	w			y		

The parenthesized (ʃ) is found only in loanwords. The sounds [l] and [r] are in complementary distribution, [r] occurring only as the second consonant of a CC cluster where the first consonant is [+coronal]. *Ts* and *dz* vary in pronunciation

between dental and alveopalatal affricates. The choice of pronunciation is partly individual, though the dental pronunciation seems to be typical of older speakers.

2.2. Syllable structure. The possible syllable types of Avatime are the following:

Table 2. Examples of Avatime syllable types

V	*ɔ́.nɔ̀*	'person'
	ì.ɣɛ̄	'knife'
CV	*lī.bà.lɛ̄*	'hoe'
C*l*/*r*V	*kī.mlɛ̀̄.mɛ̀*	'anus'
	à.srā.nà	'laziness'
CGV	*ɔ̀.mwɛ̄.nɔ̀*	'orange'
	ā.syā.nà	'horns'
N	*kpā.n̄*	'much, many'

A syllabic nasal (N) occurs only as the final segment in ideophones. A single V syllable is possible only in phrase initial position. If two vowels come together across a boundary, the hiatus is resolved in one of three ways: (i) glottal stop is inserted, e.g., *Yàwò* 'Yawo' + *ɔ̄gɛ̄* 'animal' → *Yàwò 'ɔ̄gɛ̄* 'Yawo's animal'; (ii) one of the vowels is elided, e.g., *mɛ̄* 'my' + *ɔ̄kà* 'father' → *mɔ̄kà* 'my father'; (iii) the first vowel is reduced to a glide, e.g., *ōbī* + *ē* → [ōbyē] 'the child'. Glottal stop insertion applies only at word boundaries. Elision or glide formation apply at clitic and affix boundaries, the choice of process depending on a rather complex interaction of specific morphemes, types of boundaries, and individual vowels (see Schuh [1995]). In the case of glide formation, non-low vowels in V_1 position are converted into corresponding glides. I cannot say to what extent these glides preserve features of the underlying vowels, but as a way to distinguish underlying glides from derived glides, I will use the following orthographic convention:

> CONVENTION FOR REPRESENTATION OF POSTCONSONANTAL GLIDES:
>
> (1) *Underlying glides* will be represented as *w* or *y*.
>
> (2) *Glides derived from underlying non-low vowels* will be represented as the underlying vowels but will bear no tone marking. Tone marking will be on the following vowel, e.g., *ɔ́nɔ̀* 'person' + *ɛ̄* = *ɔ́nɔɛ̀̄* 'the person', *ōbī* + *ē* = *ōbiē* 'the child'.

2.3. Vowels. Avatime has a nine-vowel system, with the vowels divided into two groups, differentiated by a feature generally called "Advanced Tongue Root" (ATR) in West African languages. The vowel system is as follows:

Table 3. Avatime vowels

	Front		Central	Back	
	[+ATR]	[-ATR]	[-ATR]	[+ATR]	[-ATR]
High	*i*	*ị*		*u*	*ụ*
Mid	*e*	*ɛ*		*o*	*ɔ*
Low			*a*		

2.3.1. Vowel harmony. The vowels participate in a cross-height vowel harmony system whereby roots and associated affixes contain only vowels which match for the feature [ATR]. This is easiest to illustrate with affixes whose vowels vary depending on the [ATR] feature of the root to which they are attached.

Table 4. Examples of vowel harmony alternations

i/ị: *lī-gbō-lè/lị̄-gɔ̀-lɛ̀* 'chair'/'year'; *bī-bū-wè/bị̄-gụ̄-wɛ̀* 'thorns'/'wars'; *sī-sē-sè/sị̄-tā-sɛ̀* 'clay'/'saliva'

e/ɛ: (see suffix examples just above; *ɛ* does not appear in any prefixes); *é tē yɛ̄/á mɔ̄ yɛ̄* 'he knows him'/'he sees him'

u/ụ: *kù-bē/kụ̀-mwɛ̀* 'tear'/'salt'; *kù-tsō/kụ̀-pɔ̄* 'monkeys'/'antelopes'

o/ɔ: *ō-dzē/ɔ́-dzɛ̄* 'wife'/'woman'; *ɔ̀-lō-lò/ɔ̀-sɔ̄-lɔ̀* 'crocodile'/'elephant grass'; *wɔ̀ pè/wɔ̀ gà* 'you are tired'/'you walked'; *é tē wō/á mɔ̄ wɔ̄* 'he knows you'/'he sees you'

e/a: *kē-tsō/kā-pɔ̄* 'monkey'/'antelope'; *ē-gbō-là/ā-gɔ̀-lā* 'chairs'/'years'; *mè sē/mà yɔ̄* 'I ran'/'I stood up'

Funke [1909] described a 9-vowel system. All the literature on Avatime since Funke has analyzed Avatime as having 7 surface vowel contrasts, either not recognizing a [±ATR] distinction in the high vowels at all [Kropp 1967, Heine 1968] or claiming that the underlying distinction is phonetically neutralized [Ford 1971a]. Schuh [1995] and Maddieson [1995] show that there is such a distinction, both phonetically and phonologically.

2.3.2. Phonologically distinctive nasalization. There is a phonological contrast between nasalized and non-nasalized vowels. This distinction seems to be disappearing. Funke [1909, 1910] noted nasalization on many more words than do the more recent sources. Ian Maddieson and I found no non-borrowed words in the nominal vocabulary with unconditioned nasalization. Nonetheless, pairs like the following make it necessary to recognize a phonological contrast between nasalized and non-nasalized vowels.

Table 5. Pairs contrasting nasalized and non-nasalized vowels

Nasalized		Non-nasalized	
kūtsítsɪ̀ɪ̄ō	'be red'	kṵtsɪ́tsɪ̀ɔ	'cut off'
kṵzázɑ̀	'be ripe, be fair-skinned'	kṵzāzà	'pass'

2.4. Tone. Most sources on Avatime [Funke 1909, Kropp 1967, Heine 1968] propose a system of three level tones. Ford [1971a], by contrast, describes Avatime as having four tone levels, which he calls tones 1-4 with tone 1 being the lowest.[1] My work on Avatime supports Ford's contention that one must recognize up to four tones. Even though Ford's numbering system is opposite the conventional Africanist tradition, with "1" as highest, I retain his numbering system in order to avoid confusion for anyone who wishes to compare my work with his. I will mark tones with the following diacritics:

Table 6. Tone marking

Tone 1	*à*
Tone 2	*ȁ*
Tone 3	*ā*
Tone 4	*á*

A three-way contrast between Ford's tones 1, 3, and 4 can be heard in a single word such as *tsàkplākpé* [_ – ¯] 'cockroach' or in the tones of prefixes in sets of words such as *kí-nībiè* 'eye' vs. *kṵ̄-mṵ̄mṵ̀è* 'unprocessed rice', *kì-sēwiè* 'stick', where the words all belong to the same noun class and all have the same tone on the first stem syllable. The phonological status of Ford's tone 2 is marginal. Most tokens of tone 2 are derived, either from conflation of tones 1 + 3 onto one syllable or by raising of tone 1. The first process can be illustrated by comparing the effects of adding the tone 3 suffix *ē/ɛ̄* to roots ending in tone 3 vs. roots ending in tone 1:

3 + 3 → 3: *ōkpō* + *ē* → *ōkpoē* [– –] 'the corpse' (cf. *bēkpōwà* 'corpses')
1 + 3 → 2: *ōkpò* + *ē* → *ōkpoɛ̀* [– _] 'the parasite' (cf. *bēkpòwɑ̀* 'parasites')

Derivation of tone 2 through raising of tone 1 is seen in the definite suffixes of most noun classes. These suffixes have tone 2 after tone 1, tone 1 elsewhere, e.g., *lī-bī-lè* 'the seed' vs. *lì-bì-lɛ̀* 'the wound'. I propose that these suffixes have

[1] Ford's [1971a] discussion of tone is exceptionally acute in recognizing subtle distinctions which are crucial for understanding the tone system. Although my data differ from his in relatively minor details and although I propose alternative solutions to his, I would have learned only a fraction of what I was able to discover about Avatime tone without his observations as a guide.

underlying tone 1 which is dissimilated to tone 2 rather than the alternative of having two sets of suffixes with different tones in complementary distribution. Despite the fact that most tokens of tone 2 can be derived from one of these sources, there are enough apparently underived instances of tone 2 that it seems necessary to recognize it as a phonologically distinctive entity. For example, the singular object pronouns bear tone 3 whereas the plural object pronouns bear tone 2, e.g., *ē vù mē* 'he caught me' vs. *ē vù bà* 'he caught them'.

One aspect of the tone system worth pointing out is that syllables bearing tones 3 or 4 are terminated by a glottal stop when at the end of a phrase whereas tone 1 is not, e.g., [*kɪ́dɛ̄'*] 'a mortar' vs. [*kɪ́dɛ̀*] 'the mortar' (< */kɪ́dɛ̄* + *è*/ 'mortar + the'). In the examples above, tone 2 which is derived from tones 1+3 ends in glottal stop ([*ōkpoè'*] 'the parasite') whereas tone 2 which is derived from raised tone 1 does not ([*lìbìlɛ̀*] 'the wound'). The tone 3 pronoun [*mē'*] ends in glottal stop whereas the tone 2 [*bà*] does not, suggesting at least a historical connection of the tone of the latter with tone 1.

3. Avatime Noun Classes

The term "noun class" has been used in two distinct ways in the description of African languages:

(1) a "class" is *a single set* of morphological concords which may show up as affixes on noun stems, affixes on noun modifiers, and pronominal referents to nouns;

(2) a "class" is a *paired set* of concords of type (1) where one member of the pair has a singular referent and the other member of the pair is the plural corresponding to that singular.

Usage (1) is the one used in nearly all work on Bantu languages and West Atlantic languages such as Wolof and Fula. Thus, in Swahili, nouns in Class 1 have a prefix *m-* with a pre-vocalic variant *mw-*, as in *m-tu* 'person', *mw-ana* 'child'; nouns in Class 2 have a prefix *wa-*, whose *-a-* is elided before roots beginning in *a*, as in *wa-tu* 'people', *w-ana* 'children' [Ashton 1966]. The fact that the Class 1 form of a particular root is the singular form for that root and will (virtually) always pair with a Class 2 form as the plural for the same root is irrelevant to the system of classes per se. The term referring to such singular/plural *pairings* is not "classes", but "genders". Thus, in Swahili, 'person' and 'child' belong to the gender consisting of the Class 1/2 pair. It is paired sets of this type which "class" in sense (2) refers to. This usage is typical in work on the Gur languages, e.g., Prost [1964], and nearly all existing work known to me on the Central-Togo languages, including Avatime.

Previous literature on Avatime provides no standardized way to refer to its nominal class system. Besides the fact that the unfortunate choice of usage (2)

rather than usage (1) creates clumsiness in description (one must refer to "the singular of Class *x*", "the plural of Class *y*", etc. rather than simply "Class *x*" or "Class *y*"), previous descriptions of Avatime classes have used five distinct numbering systems for the classes. Nonetheless, all descriptions are consistent in their inventories of class distinctions and the morphological marking of those distinctions. There are 13 classes (using sense (1) of the term "class"). These classes pair into seven genders. One of the genders has two sub-genders, one comprising nouns with overt prefixes, the other with no prefixes, but grouped as a single gender because they govern identical concords.

In order to avoid adding yet another numbering system to descriptions of Avatime, I will refer to classes by their characteristic nominal prefixes, written in small upper case letters, e.g., the "KU class", the "BI class", etc. Reference to the nominal prefixes is sufficient to distinguish the 13 classes. There are two classes with nominal prefixes having the segmental form *o-/ɔ-*, two with the segmental form *be-/ba-*, and two with the segmental form *ku-/kụ-* (the forms separated by slashes are vowel harmony variants—§2.3.1). However, the segmentally identical classes differ from each other in that the tone of one of the classes varies depending on the nominal root to which it is attached, whereas in the other class, the tone is invariably low (tone 1). The two "O" classes also differ in the concords they govern. I will refer to the classes with invariable low tone as the "Ò class", the "BÀ class", and the "KÙ class". See the next page for an explanation of the orthographic conventions used in representing the class-marking affixes.

Table 7. Avatime class prefixes and corresponding definite marking suffixes

Prefixes	Definite Suffixes	Heine [1968]	Ford [1971a]	Ford [1971b]	Kropp Dakubu & Ford [1988]	Funke [1909] Kropp [1967]
O-/bA-	-E/-Ba	I	1	1a	1/2	1
Ø/Ø	-E/-Ba	I	no mention	1b	(1/2)	8
Ò-/Ì (lÌ-)	-LO/-LE	II	7	2	3/4	6
lI-/A-	-LE/-LA	III	2	4	5/6	7
kI-/bI-	-E/-BE	IV	3	3	7/8	4
kU-/bÀ-	-O/-Ba	V	4	5	11/12	2
kA-/kÙ-	-a/-O	VI	5	7	13/14	5
(kU-)/sI-	(-O)/-sE	VII	6	6	9/10	3

Table 7 presents the nominal affixes of Avatime in their singular/plural pairings. The prefixes are an obligatory part of the noun in citation form and most other uses. Nouns can also add suffixes to show definiteness. Some speakers tend to cite nouns without these suffixes and others with the suffixes. The suffixes are included in Table 7 in order to show the typical form that class *concord* morphology takes. The table gives the class numberings from all the sources known to me which describe Avatime noun classes. All these sources other than Ford's terse sketch in Kropp Dakubu & Ford [1988] use the type (2) method of describing noun classes.

The following conventions apply to the affixal forms in the Table:

(1) The forms to the left and right of the slashes are, respectively, the singular and plural members of a class pair or gender.

(2) Lower case letters represent phonetically invariant segments for the particular affix.

(3) Small capital letters represent segments which have phonologically predictable variants. For the vowels, these will be high or mid vowels which harmonize with the [ATR] value of the host, i.e.,

I = *i*/*ị*
U = *u*/*ụ*
E = *e*/*ɛ*
O = *o*/*ɔ*

} with [-ATR]/[+ATR] hosts, respectively.

For the consonants, see §3.2 below.

(4) The parenthesized (kU-) prefix and (-O) suffix in the last row are the singular class markers found in other sources corresponding to the *sI-* class. I found it essentially impossible to elicit "singular" forms for roots in the *sI-* class, all of which are interpretable as mass nouns (see §3.3). Funke [1909:297] notes, "Der Singular dieser Substantive [of his class 3, *ku*/*si*] ist gar nicht oder fast gar nicht gebräuchlich."

(5) The parenthesized (lì-) in the second row is a plural prefix which is an alternative to ì-. This alternative is not mentioned in any of the literature on Avatime but was the preferred form of the speaker who provided most of the data for this study.

3.1. Noun class prefixes. The vowels of class marking prefixes vary according to the [ATR] specification of (the first syllable of) the host, as described in §2.3.1. The tones of four classes (Ò, Ì, BÀ, KÙ) are invariably low, but the remaining class prefixes bear tones which are lexically determined by their hosts. There are, however, restrictions on which tones even those prefixes may bear. Ford [1971a:21] notes that "no noun-class prefixes are found with tone 2". Moreover, prefixes on nouns in the O/BA gender may not bear tone 1 and prefixes on nouns in

the KA and SI classes may not bear tone 4. Table 8 presents examples of nouns with prefixes bearing all the possible tones. Note several minimal pairs distinguished only by the tone on the prefixes.

Table 8. Examples of noun class prefixes showing tonal possibilities

Sing.	Tone	Plural	Tone	Sing. noun	Pl. noun	Meaning (sing. only)
O	4	BA	4	ɔ́dzɛ̄	bádzɛ̄wà	'woman'
	3		3	ōzē	bēzēwà	'thief'
Ò	1	(L)Ì	1	ɔ̀mwɛ̄nɔ̀	ɩ̀mwɛ̄nɛ̀	'orange'
LI	4	A	4	lɩ́ʋānɛ̀	áʋānà	'bean'
	3		3	lībīlè	ēbīlà	'seed'
	1		1	lìbīlè	èbīlà	'tick'
KI	4	BI	4	kɩ́dɛ̀	bɩ́dɛ̄wɛ̀	'mortar'
	3		3	kībuè	bībūwè	'thorn'
	1		1	kìbuɛ̀	bìbūwè	'honey'
KU	4	BÀ	1	kʊ́nyɔ̀	bànyɔ̄wà	'smoke'
	3		1	kūtsē	bètsēwà	'death'
	1		1	kùbɔ̀	bèbōwà	'tear'
KA	3	KÙ	1	kāwà	kʊ̀wɔ̄	'axe'
	1		1	kèziɑ̀	kùziɔ̀	'bowl'
		SI	3		sɩ̄yàsɛ̄	'hair'
			1		sɩ̀yàsɛ̀	'Avatime language'

3.2. Definiteness marking suffixes. Avatime shows definiteness by a series of class sensitive suffixes, seen in column 2 of Table 7. These suffixes have three shapes, viz. BV, LV, V. Excluding the O class, which has a number of idiosyncratic properties, the shape and specific vowels correlate with the prefixes as shown in Table 9.

Table 9. Correlation of prefix and suffix shapes

Suffix shape	BV	LV	V	**Suffix vowel**	*a*	O	E
Prefix shape	*b*V	*l*V, V	*k*V	**Prefix vowel**	*e*/*a*	U	I

The consonants B and L of the suffixes alternate as follows:

B = *b*, *w*, or *m*: It is not clear whether the choice between *b* and *w* is a dialectal, generational, or individual speaker difference. For the most part, B is written *b* in earlier sources, but the speakers on whose speech this study is primarily based had *w* rather than *b*. The variant *m* is found in suffixes following a

nasalized vowel, including a vowel which is nasalized by a preceding nasal consonant, e.g., *ōn̨ɛ̄/bān̨ìmà* 'the person/the people'. Distinctive vowel nasalization seems to be disappearing (cf. §2.3.2). This phenomenon has created cases where the *m* variant shows up today with no apparent conditioning, e.g., *ɔ̄zu̱ɛ̄/bāzū̱mà* 'fly (cf. the entry of Funke [1910], *ɔzū-i-ɛ/ bazū-ma*, with nasalization marked in both singular and plural). Loss of distinctive vowel nasalization has obscured the conditioning for the *m* variant, such that the *b/w* variant is now found where the *m* variant would be expected and the *m* variant is sometimes used even though there is no evidence that conditioning for it was ever present, e.g., *ōnɛ̀/bénèwɛ̀* 'mother' (cf. Funke [1910], *one/bene-ma*) versus *óbuɛ̄/bébūmà ~ bébūwà* 'bee' (cf. Funke [1910], *obu-ie/bebu-ḅa*).

L = *l*, *n*: Conditioning for the *n* variant is the same as for the *m* variant of B described above, viz. following a nasalized vowel, e.g., *līgùmènɛ̀/ēgùmènɛ̀* 'cow'. Parallel to the *b/m* case, there are words where the nasalization conditioning the *n* variant is no longer heard, e.g., *l̩ìklànɛ̀/àklànɛ̀* 'cornbread' (cf. the entry in Funke [1910], *liklã̄-nɛ/aklã̄-na*, with nasalization explicitly marked). However, the *l/n* alternation has remained more stable than the *b/m* alternation. I recorded no cases where the *l* variant was used when the preceding consonant was a nasal, and I found only a couple of cases with *n* where Funke [1910] has *l*.[2] It is worth noting that there are numerous words where both Funke and my data show *n* but where no nasalization is apparent, e.g., *ɔ̀pìnɔ̀/lìpìnɛ̀* 'tail' (= Funke), suggesting that loss of distinctive vowel nasalization has been going on for a considerable period.

With the exception of the Ē suffix of the O class, which bears tone 3, the definite suffixes have tone 2 after stems ending in tone 1 and tone 1 elsewhere. I accounted for this in §2.4 by saying that they have underlying tone 1, which is dissimilated to tone 2 following tone 1. Table 10 illustrates both the consonantal alternations and tones of the suffixes having the shape CV.

[2] In one such case, *ɔ̀dɛ̄nɔ̀* 'squirrel', Funke [1910] shows a nasalized vowel but an *l* suffix, viz. *ɔdɛ̃-lɔ'*. This is the only case I came across in Funke's data where a non-nasal suffix cooccurred with an explicitly nasalized vowel.

Table 10. Examples showing consonant and vowel variants of CV suffixes

Class	Tone 1 suffix		Tone 2 suffix	
BA	bēbīwà bānḭ̄mà	'children' 'people'	bēvèwà̀ bāplḭ̀mà̀	'mice' 'lice'
BÀ[3]	bàlḭ̄wà	'palm trees'	bàsàwà̀ bamɔ'má (Funke)	'cloths' 'boundaries'
BI	bḭ̄fṵ̄wɛ̀ bḭ̄kɔ̄mɛ̀	'fires' 'staple food'	bīkùwɛ̀ bḭ̀dɔ̀mɛ̀	'yams' 'thing(s)'
LI	lḭ̄gbālɛ̀ līnyīnè	'house' 'name'	lìglìlɛ̀ līgùmènɛ̀	'wall' 'cow'
A	āgbālà ēnyīnà	'houses" 'names'	èglìlà̀ ēgùmènà̀	'walls' 'cows'
Ò	òʏūlò ɔ̀mwēnɔ̀	'vehicle' 'orange'	ɔ̀ʏàlɔ̀ òpìnɔ̀	'pig' 'tail'
(L)Ì	lìʏūlè lḭ̀mwēnè	'vehicles' 'oranges'	lḭ̀ʏàlɛ̀ lìpìnɛ̀	'pigs' 'tails'

The purely vocalic suffixes (V) require some additional discussion. Avatime does not tolerate medial syllables without onsets (cf. §2.2). When the vocalic suffixes are added to nominal stems (all of which end in a vowel), one of the vowels elides or the first vowel becomes a glide. Schuh [1995] discusses Avatime vowel hiatus phenomena in detail. We can summarize just those processes which affect the definite vocalic suffixes as follows: (i) like vowels reduce to a single vowel; (ii) high vowels become the corresponding glides; (iii) O as V_1 becomes the corresponding glide before non-O; (iv) E as V_1 elides before non-E; (v) *a* as V_1 elides before E and before O in KÙ class nouns, but in KU class nouns, *a* as V_1 is retained and O as V_2 elides. Table 11 exemplifies these processes.

[3] In my data, I have no examples for this class with an *m*V variant for the suffix, including roots with a nasal consonant. This is primarily a liquid/mass class (see §3.3), and for such nouns the plural would not be in frequent use. As mentioned above, the conditioning for the nasal variant of the suffix, has undoubtedly been obscured for a long time, so these rarely used plurals tend to take the unmarked variant of the suffix. For example, both Chris Bubuama and Funke [1910] give a plural with non-nasal suffix for 'salts', viz. *bàmwèwà̀* (Funke *bamɔ'éba*). Mr. Bubuama provided forms such as *bènūwà* 'waters', *bàmṵ̄wà* 'oils', but Funke [1910] gives only the singular KU class form for these nouns. Of nouns in this class, I found only Funke's form for 'boundaries', seen in the table, with a nasal suffix. Mr. Bubuama gave *bàmwèwà̀* (homophonous with 'salts').

Table 11. Vowel contact processes between final vowels and definite suffixes

Class	Final V	Def. suf.	Result	Example			
KA	a	a	a	kāwā + a	→	kāwà	'the axe'
	O		wa	kāgɔ̄ + a	→	kāgɔà	'the bushfowl'
	E		a	kēlédē + a	→	kēlédà	'the nape'
	U		wa	kētsū + a	→	kētsuà	'the forehead'
	I		ya	kèzī + a	→	kèziā	'the bowl'
KU, KÙ	a	O	a (KU)	kụ̀sà + O	→	kùsā	'the cloth'
			O (KÙ)	kụ̀wā + O	→	kụ̀wɔ̄	'the axe'
	O		O	kụ̄nɔ̄ + O	→	kụ̄nɔ̀	'the flour'
	E		O	kūdè + O	→	kūdò	'the road'
	U		wO	kụ̀mụ̄ + O	→	kụ̀mụ̀ɔ̄	'the oil'
	I		yO	kùdròwī + O	→	kùdròwiō	'the dogs'
O, KI	a	Ē, E	E	ɔ̄gā + Ē	→	ɔ̄gē	'the animal'
				kị̀dzā + E	→	kị̀dzè	'the rat'
	O		wE	ɔ̄nụ̀vɔ̀ + Ē	→	ɔ̄nụ̀vɔ̀ē	'the child'
				kị̄gɔ̄ + E		kị̄gɔè	'the occiput'
	E		E	ōvè + Ē	→	ōvē	'the mouse'
				kị́dē + E		kị́dē	'the mortar'
	U		wE	ɔ̄zụ̄ + Ē	→	ɔ̄zụ̀ē	'the fly'
				kìkù + E		kìkuē	'the yam'
	I		yE	ōbī + Ē	→	ōbiē	'the baby'
				kínībī + E		kínībiè	'the eye'

These vowel hiatus resolutions also cause conflation of the final stem tone and the suffix tone onto one syllable. The suffix Ē of the O class always bears tone 3; the V suffixes of the other classes follow the same tone pattern as the CV suffixes illustrated in Table 10, viz. tone 2 with a stem final tone 1 and tone 1 elsewhere. Table 12 illustrates the tonal results. The tone 3 suffixes are shown with the conditioned glottal stop (cf. end of §2.4), which is absent in other classes.

Table 12. Tones of definite suffixes coalesced with stem final vowels

P F-R*	Class	Example	Underlying		Evidence for underlying	
T 4-3 → T 4'	O	[dzàtɛ́']	/dzàtá + ɛ̄/	'lion'	dzàtáwà	'lions'
T 3-3 → T 3'	O	[ōkpoē']	/ōkpō + ē/	'corpse'	bēkpōwà	'corpses'
T 1-3 → T 2'	O	[ōkpoè']	/ōkpò + ē/	'parasite'	bēkpòwà	'parasites'

4/3 1-2 → 4/3 2	KI	kīkuɛ̀	/kīkù + ɛ̀/	'yam'	bīkùwɛ̀	'yams'
	KU	kūdō[4]	/kūdè + ɔ̀/	'road'	bèdèwà	'roads'
	KA	kāsà-mɛ̀[5]	/kāsà + à/	'waist'	kāsà-mɛ̀	'a waist'
4/3 3-1 → 4/3 1	KI	kɪ́dɛ̀	/kɪ́dɛ̄ + ɛ̀/	'mortar'	bɪ́dɛ̄wɛ̀	'mortars'
	KU	kʊ̄nɔ̀	/kʊ̄nɔ̀ + ɔ̀/	'flour'	bànɔ̄wà	'flours'
	KA	kādzɪà	/kādzī + à/	'hawk'	kādzī'	'a hawk'
1 1-2 → 1 2	KI	kìkuɛ̀	/kìkù + ɛ̀/	'rubber'	bìkùwɛ̀	'slingshots'
	KU	kʊ̀nyà	/kʊ̀nyà + à/	'bow'	bànyàwà	'bows'
	KA	kādròwià	/kādròwì + à/	'dog'	kādròwì	'a dog'
1 3-1→ 1 2	KI	kɪ̀gʊ̄ɛ̀	/kɪ̀gʊ̄ + ɛ̀/	'war'	bɪ̀gʊ̄wɛ̀	'wars'
	KU	kʊ̀mʊ̄ɔ̀	/kʊ̀mʊ̄ + ɔ̀/	'oil'	bàmʊ̄wà	'oils'
	KA	kèzià	/kèzī + à/	'bowl'	kèzī'	'a bowl'

*P = prefix tone; F = final root tone; R = result tone of coalescence

As would be expected, the tone 3 suffix of the O class suffix combines with stem final tone 3 to yield tone 3. This tone 3 suffix also combines with tone 4 to yield tone 4 (the only words which have stem final tone 4 are loanwords, all of which lack a prefix and which take O/BA gender agreements). Tones 1+3 combine to yield tone 2. Note, however, that the resultant syllable is terminated by glottal stop, a characteristic feature of tone 3.

For all but one other case, tones on the syllables resulting from vowel coalescence can be accounted for by a simple rule, viz. *the result syllable bears the tone of the final vowel.* The one case that cannot be accounted for by this statement is the last one, where tones 3-1 coalesce to tone 2 following tone 1. I propose that when the 3-1 underlying contour follows a tone *other than* tone 1, the 3 is absorbed into the preceding non-1, leaving only the 1 on the final syllable, as in 'mortar', 'flour', 'hawk'. Following tone 1, the contour 3-1 in cases like 'war', 'oil', 'bowl' simplifies to tone 2. This account allows us to say that either 1-3 or 3-1 on a single syllable will simplify to tone 2. If the underlying final tone is 3, the final glottal stop appears phrase finally; if the underlying final tone is 1, there is no glottal stop.

The definite suffixes are actually in constituency with the NP rather than just the head noun. Thus, when a noun has a following attributive adjective, the suffix is cliticized to the adjective, e.g., *ɔ̄gā vìdiɛ̀* 'old animal', *bāgā vìdìwà* 'old animals', *lɪ̄klā vìdìnɛ̀* 'old stone', *āklā vìdìnà* 'old stones', etc.

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[4] I transcribed all the examples that I collected from the KU class with tones 3-3 rather than 3-2. Though this could be a transcription error, it may well be the case that the speaker neutralized tones 2 and 3 when he pronounced these words, a neutralization which sometimes takes place, as noted above. Significantly, there is no final glottal stop, even though the level is that of tone 3.

[5] *Mɛ̀* is a postposition meaning 'in', found in the citation form of most nouns indicating locations, e.g., *ɔ̀nyrɔ̄-mɛ̀* 'farm', and words indicating an area on the body (though not specific body parts).

3.3. Lexical distribution of classes and use of classes in nominal derivation and compounding. I assembled a list of 467 nouns, including both derived and underived. Table 13 shows the numbers of nouns in each gender, the overall percentage, and a rough characterization of the semantic ranges typical for each gender.

Table 13. Numerical distribution and semantics of genders

Gender	Number	%	Semantics
O/BA	83	18%	almost all human nouns, wild and domestic animals ('animal', 'goat', 'mouse', 'grasscutter', 'bee', etc.)
Ø	71	15%	almost all borrowed words (no semantic limitations)
Ò/Î	76	16%	wild and domestic animals ('pig', 'chicken', 'squirrel', 'crocodile', 'gecko'), edible plants ('okra', 'orange', 'maize'), domestic items ('mat', 'stirring stick', 'firewood', 'spear'), body parts, esp. internal ('leg', 'heart', 'intestine', 'vein')
LI/A	96	21%	sort of a catch-all class—body parts ('face', 'nose', 'bone', 'breast', 'horn'), times (days of the week, 'year', 'morning', 'day', 'night'), misc. inanimates ('stone', 'hoe', 'headpad', 'drum'), places ('hole', 'mountain', 'sky', 'lake'), acts/emotions ('event', 'life', 'fear', 'work', 'skill', 'lie'), a few animals ('cow', 'snail', 'butterfly')
KI/BI	28	6%	body parts ('eye', 'tongue', 'occiput', 'finger'), edible things ('yam', 'honey', 'rice', 'staple food'), misc. inanimates ('stick', 'money', 'fire', 'mortar', 'thing')
KU/BÀ	37	8%	liquid/mass ('alcohol', 'water', 'oil', 'salt', 'flour', 'smoke', 'shade'), some locatives ('boundary', 'middle', 'bathroom', 'hole', 'road'), all verbal nouns
KA/KÙ	53	11%	animals and birds—primarily wild ('dog', 'antelope', 'monkey', 'tortoise', 'bushfowl', 'hawk', 'bird'), body parts ('leg', 'chest', 'forehead', 'back'), places ('town', 'market', 'compound'), domestic utensils ('ax', 'bowl', 'calabash', 'basket', 'spoon')
SI	23	5%	mass nouns—primarily non-liquid ('grass', 'sand', 'clay', 'excrement', 'hair', 'saliva'), language names

Certain semantic categories fall almost exclusively into certain genders: nearly all *human nouns* fall into the O/BA gender (or the Ø gender, which is a subclass of O/BA without prefixes); nearly all *liquids* and many *mass* nouns are in the KU/BÀ gender, and those which are not in that gender are in the SI gender; *times* seem to prefer the LI/A gender. Other semantic categories are distributed fairly evenly across the genders, e.g., there is no strong correlation of gender for body parts, fauna, or concrete inanimates.

Like most languages with noun class systems, choice of noun class plays a role in derivation. I did not investigate noun derivation in any detail, but Table 14 gives a few of the patterns I found.

Table 14. Examples of noun classes/genders in nominal derivation

Derived meaning	Class/ Gender	Examples		
VERBAL NOUN	KU	kūsēsē	< sē 'run'	'running'
		kụ̄klàklà	< klà 'read, count'	'reading'
		kūŋàŋà	< ŋà	'eating'
AGENT NOUN	O/BA	ōsēsē	< sē 'run'	'runner'
		ɔ̄klàklɛ̄	< klà 'read'	'reader'
		ɔ̄dɔ̀ŋɛ̄	< bī-dɔ̀ + ŋà 'thing + eat'	'eater'
LOCATIVE NOUN	Ò/Ì	òsēlɔ̀	< sē 'run'	'place to run'
		ɔ̀klàlɔ̀	< klà 'read'	'library'
		ɔ̀dɔ̀ŋàlɔ̀	< bī-dɔ̀ + ŋà 'thing + eat'	'chop bar'
LANGUAGE	SI	sìyàsɛ̀	< ?	'Avatime'
		sìyòfɔ̄nɛ̀	cf. yòfɔ̄nɛ̀ 'European' < yof- (< Ewe) + ɔ́nɔ̀ 'person'	'English'

Order in genitive phrases is /possessor + possessed/. The two nouns are juxtaposed with no further marking, e.g., *ɔ́nɔ̀ līgùmè* 'a person's cow'. Compounds can be formed by such juxtaposition, but with the whole compound bearing the class marking of N2 and no separate prefix on N2, e.g., *sīnūgūpìsɛ̀* 'mustache' < */ò-nūgū-lò* 'mouth' + *sī-pì-sɛ̀* 'body hair'/. I am not sure to what extent this compounding process is productive in Avatime. For all the acceptable examples I was able to coin, the regular genitive construction was an alternative, and my informant rejected many examples of compounds which I suggested, accepting only a regular genitive construction (cf. last example in Table 15). In Table 15, the genitive alternative shows the nouns with their regular noun class marking. Noun class prefixes are hyphenated.

Table 15. Compounds with class of N_2

Genitive	Compound	Genitive or compound meaning
lī-gùmènɛ̀ kɨ̀-dzɛ̀ ò-ʋèsìlō kɨ̀-dzɛ̀ kā-pɔà kɨ̀-dzɛ̀	kī-gùmèdzɛ̀ kī-ʋèsìdzɛ̀ kɨ̀-pɔ̄dzɛ̀	'cow meat' 'sheep meat' 'antelope meat'
lī-gùmènē sɨ̀-mɨ̀sɛ̀ ò-ʋèsìlɔ̄ sɨ̀-mɨ̀sɛ̀ kā-pɔà sɨ̀-mɨ̀sɛ̀	sì-gùmèmīsɛ̀ sɨ̀-ʋèsìmɨ̀sɛ̀ sɨ̀-pɔ̄mɨ̀sɛ̀	'cow dung' 'sheep dung' 'antelope dung'
ɔ́-kɔ̄nɛ̀ lī-gblèlɛ̀ fɔ̄mízíē lī-gblèlɛ̀	lɨ́-kɔ̄gblèlɛ̀ *but* *lɨ-fɔmizigblele	'chicken coop' 'rabbit coop'

4. Concord in Attributive Modifiers

All nominal attributive modifiers follow the head noun. We can distinguish three types of concord in attributives: (i) full prefix concord, (ii) vocalic concord, (iii) tonal concord. Both Funke [1909] and Ford [1971a] report a few constructions with full prefix concord of the type $Pref_C$-N + $Pref_C$-modifier (subscript C = a particular class) familiar from Bantu languages. Thus, Funke [1909:308] gives examples of the indefinite *-tɔ̄* such as *ɔ́-nɔ ɔ́-tɔ* 'a certain man' vs. *kí-dɔ' ki-tɔ* 'a certain thing', and Ford [1971a:28-29] gives examples of ordinal numbers such as *kī-kù kī-tɔ̀pwyɛ̀* 'the first piece of rubber', *ɔ́-nɔ̀ ɔ̄-ʋlɛ̄* 'the second person'. In my field work, I elicited many examples of nominal constructions containing attributive modifiers, including counterparts of those illustrated from Funke and Ford, but I found no examples of full prefix concord. Although I did not check to see whether full prefix counterparts were possible alternatives, it is safe to say that these were not the normally used forms for the speakers with whom I worked. The discussion here will therefore be limited to *vocalic concord* and *tonal concord.*

Vocalic concords are changes in initial vowels of the attributives which are sensitive to the classes of the head nouns. There are two sets of vocalic concords: those used with cardinal numbers and the interrogative 'how many?' and those used with the indefinite *-tɔ̄* and the demonstrative *-yà* 'this, these'.[6] Table 16 shows the vocalic concords for the respective classes. For the numbers, the singular classes obviously can only be modified by *-le* 'one', which is given in parentheses. For the plural classes, the prefix harmonizes with the [ATR] specification of the number's root—all the examples here use 'four', which is [+ATR]. See an explanation of the tones below.

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[6] It is possible that the latter are used for other clitics such as the distal demonstrative *-kɔ́lɔ'* (cf. Funke [1909:306]), but I collected paradigms only for those mentioned.

Table 16. Vocalic concords for noun classes

Class	Cardinal # concord			Indefinite & demonstrative concord		
O	*to(lɛ̀)*	ōvè tɔ̀lɛ̀	'1 mouse'	E	ōvětɔ̄	'some mouse'
BA	*tɥe-/tɥa-*[7]	bēvè tɥènɛ̀	'4 mice'	*a*	bēveătɔ̄	'some mice'
Ò	*to(lé)*	ŏpō tɔ̀lɛ̀	'1 door'	E	ŏpoéyà	'this door'
(L)Ì	*ti-/tị-*	lĭpō tìnɛ̀	'4 doors'	E	lĭpoéyà	'these doors'
LI	*ti(lɛ̀)*	lị̄bà tɪ̀lɛ̀	'1 hoe'	E	lị̄béyà	'this hoe'
A	*te-/ta-*	ābà tɛ̀nɛ̀	'4 hoes'	*a*	ābáyà	'these hoes'
KI	*ti(lɛ̀)*	kị̀gū̄ tìlɛ̀	'1 war'	E	kị̀gụ́éyà	'this war'
BI	*tu-/tụ-*	bị̀gū̄ tùnɛ̀	'4 wars'	E	bị̀gụ́éyà	'these wars'
KU	*tu(lɛ̀)*	kū̄lī̀ tùlɛ̀	'1 palm tree'	O	kū̄lị́óyà	'this palm tree'
BÀ	*tɥe-/tɥa-*	bàlī̀ tɥènɛ̀	'4 palm trees'	*a*	bàlị́áyà	'these palm trees'
KA	*tye(lɛ̀)*	kèzī tièlɛ̀	'1 bowl'	*a*	kèziáyà	'this bowl'
KÙ	*tu-/tụ-*	kùzī tùnɛ̀	'4 bowls'	O	kùzióyà	'these bowls'
SI	(There are no count nouns in this class.)			E	sì̀mị́éyà	'this excrement'

The vocalic concords for the *indefinites and demonstratives* are the same as the vowels of the definite *suffixes* of the respective classes with the exception of the Ò class (see Table 7 and examples in Tables 10 and 11). The concord vowel of the demonstrative *-yà* always bears tone 4. See below for the tone of the concord vowel of the indefinite *-tɔ̄*.

The vowels in the *numeral prefixes* are the same as the vowels in the noun class prefixes (including their [ATR] alternates) with the exception of BI, whose numeral prefix has -U-. The other BV numeral prefixes have a rounded glide followed by a non-high vowel. It therefore appears that historically or in synchronic derivation for the BI class, the high vowel has coalesced with the glide (**twI-* → *tU-*). A similar account can explain the variants of the numeral prefixes corresponding to the kV noun class prefixes. The KA class has a front glide preceding the non-high *e* (which is the expected vowel in the numeral prefix for this class, since *e* is the [+ATR] variant for the *e/a* vowel alternates). Assuming that the *-y-* in the KA class agreement prefix correlates with the K in the same way that the round glide in the BV agreements correlates with the B, the KI, KU, and KÙ classes must have all had high vowels which coalesced with the *-y-* glide (**tyI-* → *tI-*, **tyU-* → *tU-*).

I borrow the term *tonal concord* from Ford [1971a:24ff.].[8] Tonal concord differs from vocalic concord in that tonal concord is not, strictly speaking, a type of

[7] The glide in this prefix seems to vary between [w, y, ɥ]. The variant I most frequently notated is the latter.

[8] Ford [1971a:24ff.] uses the term "tonal concord" in two distinct ways. One is the tonal alternation of the definite suffixes, which is conditioned by the preceding tone (Tables 10 and 12).

nominal class concord. In tonal concord, the tone of an attributive modifier prefix is determined by the tone of the head noun prefix, regardless of the class of that noun. Among the attributive modifiers that I investigated, I found three cases of tonal concord. These are the cardinal numeral, the interrogative 'how many?' (which differs only slightly from the cardinal numerals), and the indefinite *-tɔ̄*.

For *cardinal numbers*, if the noun class prefix bears tone 3 or tone 4, the numeral prefix bears tone 2; if the noun class prefix bears tone 1, the numeral prefix does as well.

Table 17. Tones of cardinal numeral prefixes[9]

Class	Tone 4 or 3 prefix on head noun		Tone 1 prefix on head noun	
O	ɔ́dzɛ̄ tɔ̀lɛ̀ ɔ̄gā tɔ̀lɛ̀	'1 woman' '1 animal'	(no tone 1 prefixes in this class)	
BA	bádzɛ̄ tu̱ɛ̀nɛ̀ bāgā tu̱ɔ̀và	'4 women' '2 animals'	(no tone 1 prefixes in this class)	
Ò	(no tone 3 or 4 prefixes in this class)		ɔ̀mwɛ̄ tɔ̀lɛ̀	'1 orange'
(L)Ì	(no tone 3 or 4 prefixes in this class)		lì̩mwɛ̄ tìnɛ̀	'4 oranges'
LI	lí̩vā tì̩lɛ̀ lí̩bà tì̩lɛ̀	'1 bean' '1 hoe'	lìglì tìlɛ̀	'1 wall'
A	ávā tɛ̀nɛ̀ ābà tɔ̀và	'4 beans' '2 hoes'	ègli tàvà	'2 walls'
KI	kí̩dɛ̄ tì̩lɛ̀ kīkù tì̩lɛ̀	'1 mortar' '1 yam'	kì̩gū̩ tìlɛ̀	'1 war'
BI	bí̩dɛ̄ tù̱và bīkù tù̱nɛ̀	'2 mortars' '4 yams'	bì̩gū̩ tù̱và	'2 wars'

Ford's other use of "tonal concord" is the correlation of the tone of an attributive modifier prefix with a head noun class prefix. I use the concept of "tonal concord" only in the second way.

[9] I do not fully understand the tones of number roots. In counting forms, the illustrative numbers here have the following tones: *ɔ̀lé* 'one', *ɔ̀và* 'two', *ɔ̀né* 'four'. Significantly, those marked with tone 4 here ('one' and 'four') do not terminate in glottal stop, in contrast to all lexical substantives which end in tone 3 or 4 (see end of §2.4). 'Two' is also tonally peculiar in that it has two level low tones [_ _], in contrast to the canonical pattern of a series of lows which drops before pause. In enumerating nouns, the numbers which end in tone 4 in isolation end in tone 2, i.e., if the numeral prefix bears tone 2, the numeral root has the same pitch and if the numeral prefix bears tone 1, the numeral root rises only to the level of tone 2.

KU	kū̱lī̱ tùlɛ̀ '1 palm tree'	kù̱sà tùlɛ̀	'1 cloth'
BÀ	(no tone 3 or 4 prefixes in this class)	bàlī̱ tɥàʋà bàsà tɥ̱ɛ̀nɛ̀	'2 palm trees' '4 cloths'
KA	kāwɛ̄ tyɛ̀lɛ̀ '1 axe'	kèzī tyèlɛ̀	'1 bowl'
KÙ	(no tone 3 or 4 prefixes in this class)	kù̱wɛ̄ tùnɛ̀ kùzi tù̱ʋà	'4 axes' '2 bowls'

Ford [1971a:28] assigns tone to the numeral prefixes with the following rule:

$$\text{Cardinal prefix} \rightarrow \begin{bmatrix} \text{-high} \\ \alpha\text{raised} \end{bmatrix} / [_{\text{N pref.}} [\alpha\text{high}] \ldots \_\_]$$

i.e., provide a numeral prefix with tone 1 (= [-high, -raised]) if the tone of the nominal prefix is [-high] (= tone 1) and tone 2 ([-high, +raised]) if the tone of the nominal prefix tone is [+high] (= tone 3 or 4). This rule has in its favor the fact that it works, but the phonetic motivation, if any, is minimal. Moreover, there is no apparent link to other Avatime tonal processes. I suggest that the underlying tone of the numeral prefix is tone 1 (the tone found in all the counting forms) and that the tone of the head noun prefix is copied onto the numeral prefix syllable, producing a 3/4+1 or 1+1 tonal combination on the prefix. In the latter case, the result will automatically be tone 1. We have seen elsewhere that tones 3+1 on one syllable coalesce to tone 2. There are at least two possible accounts for the coalescence of tones 4+1 to tone 2. We might simply say that any non-1+1 coalesces to tone 2. Alternatively, we might say that tone 1 is copied to a numeral prefix if the head noun prefix bears tone 1 and tone 3 is copied to the numeral prefix elsewhere.

Ford [1971a:32] lists the interrogative *-sɛ̀* 'how many?' as having prefixes with invariable tone 2 rather than showing tonal concord. My principal informant did have tonal concord for this word. Tonal concord for 'how many?' differs from numeral tonal concord in that the prefix has a rising glide when the head noun prefix has tone 3 or 4 and a falling glide when the head noun prefix has tone 1. For semantic reasons, 'how many?' cooccurs only with plural count nouns. Illustrations in Table 18 are with the A and BI classes, which are the only plural classes with nouns bearing all three possible prefix tones, 4, 3, 1.

Table 18. Tones of prefixes for *-sɛ̀* 'how many?'

Class	Tone 4 or 3 prefix on head noun		Tone 1 prefix on head noun	
A	ávā tǎsɛ̀ ābà tǎsɛ̀	'how many beans?' 'how many hoes?'	èglì tâsɛ̀	'how many walls?'
BI	bí̩dē tǔ̩sɛ̀ bīkù tǔ̩sɛ̀	'how many mortars?' 'how many yams?'	bì̩gū̩ tû̩sɛ̀	'how many wars?'

The contour tones start at about the level of tone 2 and rise to about the level of tone 4 or fall to the level of tone 1, respectively. Iconically, it is as if the prefix of *sɛ̀* bears tone 2 and the prefix tone of the head noun is placed *after* that tone. There are several problems with this analysis, however. First, all other cases of derived contour tones that I know of in Avatime involve conflating tones 1+4 on one syllable to give a rising tone—other tonal conflations yield level tones rather than contours. Second, the "iconic" analysis for 'how many?' is unrelated to that for the cardinal numbers, even though the prefixes seem to be identical. I must therefore leave this as a problem without a satisfactory solution.

Among attributive modifiers, the final example of tonal concord to be examined is the vocalic prefix of the indefinite marker *-tɔ̄*. In this case, the prefix is a vowel, which coalesces with the final vowel of the head noun to form a single syllable. One must therefore take into consideration the tone of the head noun prefix and the tone on the last syllable of the head noun. Tables 19a and 19b below show the tones of the syllables resulting from the coalescence of the suffix tone, which is derived from the tone of the head noun prefix, and the final tone of the noun stem.

Table 19a. Indefinite *-tɔ̄* on nouns with tone 3 or 4 prefix (P = prefix tone of noun, F = final tone of noun, R= result tone from coalescence of F+P)

Class	P-3/4, F-3 → R-4		P-3/4, F-1 → R-1̂4 (see below)	
O	ɔ́dzɛ́tɔ̄ ɔ̄gátɔ̄	'some woman' 'some animal'	ōvětɔ̄	'some mouse'
BA	bádzátɔ̄	'some women'	bēveătɔ̄	'some mice'
LI	lí̩vátɔ̄	'some bean'	lí̩bětɔ̄	'some hoe'
A	ábátɔ̄	'some beans'	ābătɔ̄	'some hoes'
KI	kí̩dɛ́tɔ̄	'some mortar'	kīkɥ̩ětɔ̄	'some yam'
BI	bí̩dɛ́tɔ̄	'some mortars'	bīkɥ̩ětɔ̄	'some yams'
KU	kū̩lí̩tɔ̄	'some palm tree'	kūdětɔ̄	'some road'
KA	kāwátɔ̄	'some axe'	(no examples elicited)	
SI	sí̩wɛ́tɔ̄	'some grass'	(no examples elicited)	

Table 19b. Indefinite *-tɔ̄* on nouns with tone 1 prefix

Class	P-1, F-3 → R-3(?!) (see below)		P-1, F-1 → R-1	
Ò	ɔ̀mwɛ̄tɔ̄	'some orange'	(no examples elicited)	
(L)Ì	l̩ìmwɛ̄tɔ̄	'some orange'	(no examples elicited)	
LI	(no examples elicted)		lìglìtɔ̄	'some wall'
A	(no examples elicited)		èglìtɔ̄	'some walls'
KI	k̩ìgū̩tɔ̄	'some war'	(no examples elicited)	
BI	bìgu̩ɛ̄tɔ̄	'some wars'	(no examples elicited)	
KU	(no examples elicited)		kù̩sàtɔ̄	'some cloth'
BÀ	bàl̩iātɔ̄	'some palm trees'	bàsàtɔ̄	'some cloths'
KA	kèzītɔ̄	'some bowl'	(no examples elicited)	
KÙ	kùzītɔ̄	'some bowls'	(no examples elicited)	
SI	sìm̩ītɔ̄	'some excrement'	(no examples elicited)	

There is variation in the results of the vowel coalescences—most commonly, V_2 (the prefix of *-tɔ̄*) is elided, but sometimes V_1 (the stem final vowel of the head noun) is elided and sometimes V_1 is retained as a glide (see Schuh [1995] for more detailed discussion). I have given the forms as I recorded them in my notes. See Table 17 above for the stem final vowels and tones of the illustrative nouns; see Table 16 for the vowels of the prefixes of *-tɔ̄*.

My data differ from Ford's [1971a:24-25] in two respects. A minor difference is in the rising contour seen in the right-hand column of Table 19a. Ford describes this as a 1-4 rise. In my data the starting point of the contour is rarely, if ever below the level of the preceding tone and is sometimes higher. There is probably no substantive difference here. In any account, the contour clearly comes from a combination of tone 1+3/4. The fact that the starting and ending points of the contour are not at the predicted pitch levels probably has no phonological significance.

The second, perhaps more substantive difference between mine and Ford's data is the realization of tones P-1+F-3 in the left-hand column of Table 19b. Here, Ford [1971a:25] has a surface realization of R-2, e.g., */lìbī + tɔ̄/ → lìbǐtɔ̄* 'some tick' with tones 1-2-3 rather than tones 1-3-3 as in my data for an expression like 'some orange'. It would, in fact, make me happier to have the tones that Ford gives inasmuch as I have suggested at several points that the major source of tone 2 is conflation of tones 1 and 3. However, I have numerous tokens of the construction in question, including recordings which I have carefully checked, and they are consistent in showing the 1-3-3 tone pattern. One possibility is that the sequence 2-3# levels to 3-3# (or 2-2#). As noted in footnote 9, numeral root tones appear to undergo such a leveling. This solution would need further checking.

Ford [1971a:27] assigns tone to the indefinite prefixes with the following rule:

$$\text{Indefinite adjective prefix} \rightarrow \begin{bmatrix} \alpha\text{high} \\ \alpha\text{raised} \end{bmatrix} / [_{\text{N pref.}} [\alpha\text{high}] \ldots \_\_\_$$

i.e., provide the prefix of *-tɔ̄* with tone 1 (= [-high, -raised]) if the tone of the nominal prefix is [-high] (= tone 1) and tone 4 ([+high, +raised]) if the tone of the nominal prefix tone is [+high] (= tone 3 or 4). This rule has the same problems as those for Ford's similar rule for the numeral prefixes. Moreover, the two rules together each make the other look all the more arbitrary. Unlike the numeral prefix, however, there is no readily apparent analysis whereby the prefix of *-tɔ̄* can be assigned a single underlying tone from which all the surface forms result, i.e., it appears that the prefix of *-tɔ̄* does gets its tone from the head noun's prefix tone through "tonal concord". As an alternative to Ford's abstract account, making use of variables, I suggest that the prefix of *-tɔ̄* simply copies the tone of the head noun prefix. This accounts for prefix tones 4 and 1. In the case of tone 3, Ford [1971a] documents a number of environments where tone 3 is raised to tone 4 before another tone 3 (see Schuh [1995] for some discussion). I propose that the copied tone 3 undergoes this raising before the tone 3 of *-tɔ̄*.

There are some attributive modifiers which Ford [1971a] gives with prefix concord, and, in some cases, tonal concord but with which my informants had no concord marking at all. Ford provides very few examples. I have tried to pair examples from his and my data which are comparable:

Table 20. Attributive modifiers with prefixes in Ford [1971a] but lacking prefixes in Schuh's data

Modifier	Schuh		Ford [1971a]	
'no, none'	kī-kù tɔ́tɔ̄	'no yam'	kī-bū kī-tɔ́tɔ̄	'no thorn'
	kị̀-gū̀ tɔ́tɔ̄	'no war'	kì-bū kì-tɔ́tɔ̄	'no honey'
'which?'	ɔ́-dzɛ̄ wɔ̀lí[10]	'which woman?'	ɔ́-lū ɔ̄-wɔ̀lì	'which buffalo?'
	ɔ̀-mwɛ̄ wɔ̀lí	'which orange?'	ɔ̀-lɛ̄ ɔ̀-wɔ̀lì	'which crocodile?'
'any at all'	ɔ́-dzɛ̄ kákeēlū	'any woman'	bī-fū bī-kákeɛ̀lū	'any fires'
	kù̀-sà kákeēlū	'any cloths'	bì-sēbì bì-kákeɛ̀lū	'any sticks'
ordinals	ɔ̄-vè ʋlɛ̀	'the 2nd mouse'	ɔ́-nɔ̄ ɔ̄-ʋlɛ̀	'the 2nd person'
	kī-kù tɔ̀pyɛ̀	'the 1st yam'	kī-kù kī-tɔ̀pwyɛ̀	'the 1st yam'
	kị̀-gū̀ tɔ̀pyɛ̀	'the 1st war'	kì-kù kì-tɔ̀pwyɛ̀	'the 1st piece of rubber'

[10] I elicited examples of 'which ...?' in the frame ___ *wɔ̀lí wɔ̀ mɔ̀?* 'which ___ did you see?'. The final syllable of 'which?' changes to tone 4 in this environment, accounting for the difference in the tone of my and Ford's examples.

To conclude this section it is worth calling attention to one case where no sources on Avatime report concord yet which is one of the canonical environments for concord in Bantu languages, viz. attributive adjectives. The examples in Table 21 do have concord in the definite suffixes, but as pointed out above, these are in constituency with the entire NP and are not obligatorily present:

Table 21. Examples showing lack of prefix concord in attribute adjectives

Cl.	'big'		'tall'		'old'	
O	ɔ̄gā vìdiɛ̀	'animal'	ɔ́nɔ̄ dzɔ́dzɔɛ̄	'person'	ɔ̄gā kókoɛ̄	'animal'
BA	bāgā vìdìwà	'animals'	bánɔ̄ dzɔ́dzɔ̄wà	'people'	bāgā kókōwà	'animals'
LI	lɪ̀klà̀ vìdìnɛ̀	'stone'	lītō dzɔ́dzɔ̄lɛ̀	'mountain'	līgbō kókōlɛ̀	'chair'
A	āklà̀ vìdìnà	'stones'	ētō dzɔ́dzɔ̄là	'mntns'	ēgbō kókōlɛ̀	'chairs'
KI	kīkù vìdiɛ̀	'yam'	kìsēwī dzɔ́dzɔɛ̀	'stick'	kɪ́dē kókoè	'mortar'
BI	bīkù vìdìwɛ̀	'yams'	bìsēwī dzɔ́dzɔ̄wɛ̀	'sticks'	bɪ́dē kókōwè	'mortars'

5. Remarks on Referential Concord

To limit the scope of this paper, I have described in detail only concord of attributive modifiers of nouns. Avatime also has a full range of referential words which show concord with their referents. Funke [1909] and Ford [1971a, 1971b] report on some such referential uses for which I did not collect full paradigmatic data. *Adjectives* may be used substantively by adding the class prefixes of their referents, e.g., [Funke 1909:320] *o-kpékpe/be-kpékpe* 'the short one' (O class)/'the short ones' (BA class), [Ford 1971a:31] *bā-gɔ̄gɔ̄-bà/bà-gɔ̄gɔ̄-bà* 'the rest' (BA class)/'the rest' (BÀ class).[11] Similarly, *demonstrative pronouns* and *indefinite pronouns* can be formed using the prefixes of their referents, e.g., [Funke 1909:306] *li-lɛ-tsyia/la-lá-tsyia* 'this one' (LI class)/'these' (A class), [Funke 1909:308] *bá-tɔ* 'certain ones' (BA class).

There is a full set of personal pronouns corresponding to the respective classes. Two uses of these pronouns are as direct objects of verbs and as free pronouns, not bound to any morphosyntactic host. The pronoun corresponding to the O class bears tone 3 and all the rest tone 2. The resemblance to the definite suffixes (Table 7) is obvious, the only differences being the initial *y-* glide for the O class pronoun

[11] Ford [1971a:31] says that the substantival adjective prefixes have tonal concord as follows: tone of the prefix on the adjective will be tone 3 if the tone of the referent's prefix is tone 3 or 4 (i.e., [+h]) and tone 1 if the tone of the referent's prefix is tone 1. However, the only examples he gives are from the O and BA classes, where the prefix tones *must* be 3 or 4, and the Ò and BÀ classes, where the prefix tone must be 1. The crucial cases for testing the claim of tonal concord would be those such as the KI or BI classes, where the referent could bear any of the tones 1, 3, 4.

and the initial *k*-'s in the KV classes. The frames for eliciting the nouns and corresponding pronouns head the respective columns.

Table 22. Personal pronouns corresponding to classes

Class	*wɔ mɔ ...?*[12] **'Did you see the ...?'**	*ma mɔ ...?* **'I saw IT/THEM.'**	
O BA	ɔ̄gē bāgāwà	yē wà	'animal' 'animals'
Ò (L)Ì	ɔ̄mwēnɔ̀ ì̩mwēnè	lɔ̀ lɛ̀	'orange' 'oranges'
LI A	lɪ̩bàlɛ̀ ābàlà	lɛ̀ là	'hoe' 'hoes'
KI BI	kīkuè bīkùwè	kɛ̀ wɛ̀	'yam' 'yams"
KU BÀ	kū̩lɪ̩ɔ̄ bàlɪ̩wà	kɔ̀ wà	'palm tree' 'palm trees'
KA KÙ	kāŋwɪ̩à kù̩ŋwɪ̩ɔ̀	kà kɔ̀	'broom' 'brooms'
SI	sɪ̩wāsè	sē	'grass'

Two final cases of interest because they involve both class concord and tonal concord are *subject agreement clitics* of verbs [Ford 1971a:49] and prefixes on *the possessor morpheme -nē* used in independent possessive constructions as illustrated below [Ford 1971a:31]. The segmental forms for the agreement clitics for the respective classes are as follows: *e/a*[13] (O class), *be/ba* (BA class), *è/è* (Ò class), *lì/lɪ̩* ((L)Ì class), *li/lɪ̩* (LI class), *e/a* (A class), *ki/kɪ̩* (KI class), *bi/bɪ̩* (BI class), *ku/kʊ̩* (KU class), *bè/bà* (BÀ class), *ke/ka* (KA class), *kùi/kʊ̩* (KÙ class), *si/sɪ̩* (SI class). The

[12] I have not marked tones in the Avatime frames. The verb *mɔ* and the subject pronoun change tone depending on the initial tone of the object. Object tones are *not* affected, however.

[13] The 3rd singular subject clitics for the O class raise descriptive issues which I have not fully worked out. The vowel harmony variants here appear in most affirmative tenses, e.g., [+ATR] *ē sē* 'he ran', [-ATR] *ā gà* 'he walked', but in the negative, this clitic has the variants *o/ɔ*, e.g., [+ATR] *ǒ sē* 'he didn't run', [-ATR] *ɔ̌ gà* 'he didn't walk'. This cannot be explained by a negative marker "*o*", since there is no alternation in the first person singular pronoun, which has the *e/a* variants everywhere, e.g., *mè sē/mě sē* 'I ran/I didn't run', *mà gà/mǎ gà'* 'I walked/ I didn't walk'. I did not check whether O class human and non-human referents govern the same agreement pattern.

prefixes for the possessor construction are the same as the respective nominal prefixes. I present only representative examples of each to illustrate tones:

kūdō ***kū*** *kēmè*	'the road is big'
kùtsō ***kùi*** *kēmè*	'the monkeys are big'
kūwà ***kū*** *lį́ ní kēpāmè*	'the medicine is in the house'
kụ̀wɔ̄ ***kù*** *lį́ kēpāmè*	'the axes are in the house'
kį́-déyà mē ***kį́-****nē*	'this mortar is mine' ('mortar-this my *ki*-possession')
kī-kuéyà mē ***kį́-****nē*	'this yam is mine'
kị̀-gụéya mē ***kị̀-****nē*	'this war is mine'

According to Ford [1971a:49], the subject agreement prefixes bear tone 3 if the referential noun prefix bears tones 3 or 4 (cf. fn. 11). I did not collect paradigms of all possible tonal combinations to check this. The tone on the possessor prefix is the same as the tone on the prefix of the *-tɔ̄* indefinite, i.e., tone 4 if the prefix of the referential noun bears tones 3 or 4, tone 1 if the prefix of the referential noun bears tone 1 (see Tables 19a, 19b and discussion). Note that both *-tɔ̄* and *-nē* bear tone 3.

6. Conclusion

There is relatively little information available on the Central-Togo languages in general and on Avatime in particular. Funke [1909, 1910], the most extensive published works on Avatime, are valuable descriptive studies, but in many respects, they do not meet the standards and needs of modern linguistics. The only extended, reliable modern linguistic study on Avatime is Ford [1971a], which is unpublished and which is available only in its original manuscript form in the library of the University of Ghana Linguistics Department. Moreover, although this dissertation was of tremendous help in guiding my own research, it is primarily a syntactic study with only the bare essentials of the phonology and nominal morphology. Ford [1971b] is a study of the noun class system, but it is of limited value as a descriptive work on Avatime. The descriptive portion consists entirely of tables of class affixes and concords without presentation of a single full word of Avatime, and the main point of the paper is the application of a theory of markedness to the noun class system rather than a description of Avatime *per se*.

The purpose of this paper has been to provide descriptive information on the linguistic feature for which the Central-Togo languages are best known, viz. their active noun class systems. Nearly all previous works have laid out the noun class system, but the present paper provides more detail than any single previous work. Besides the inherent linguistic interest of Avatime itself, the information here

should be of typological, comparative, and historical interest. The aspects of Avatime presented here also have a number of features of general linguistic interest, e.g., the concept of tonal concord (first noted by Ford [1971a]), the results of tone and vowel coalescence, and the variety of concord types (or lack of them).

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