noted that the tonal implication of Cl. 3 radicals is according to the basic tone of the suffix. In negative tenses the implication of Cl. 3 radicals, in relation to tonal behaviour in the affirmative, is reversed if the suffix in the negative is firm, and is not reversed if the suffix in the negative is free.

Examples of reversal in the governed nominal:

Tbikadagida mgədə mədə We will not divide the oil
(--.--.-- | --.-- | --.--)

Tbikadaniind weərə rociə We will not finish the work tomorrow
(--.--.-- | --.-- | --.--)

Cf. with corresponding affirmative sentences:

Tokaagida mgədə mədə
Tokaasind weərə rociə

Note that the speech tones of the governed nominal are reversed, mgədə and weərə after a positive form but mədə and weərə after a negative. There is no reversal in the verbal in each negative sentence.

11. The presence of regular mid-tones in negative tenses can therefore be related to a two-level system, but only through observation of tone-shift and tone-reversal.

THE NOMINAL

12. For nominals the same method of tonal classification as for verbs is found to be effective. As in most Bantu languages, there are many Kikuyu nominals which have the same radical as that in a related verbal, e.g. ədəri light, cf. -Etər- be bright, be clean; kerə a dream, cf. -ən- dream. The tonal correspondence between related radicals is regularly maintained in Kikuyu so that if the tonal class of the verbal radical is known, the related nominal has a radical of the same class. The suffix is a lexical element in nominals and may have predictable tone, e.g. -i and -ə in nominals related to verbs have basic Low tone, -ə and -u have basic High tone. Tonal classification of nominals is according to the basic tone of radical and suffix. The nominal prefix is tonally neutral. In nominals with a radical related to that of a Cl. 3 verbal tonal behaviour corresponds to that in the verbal, i.e. it accords with the basic tone of the suffix. So that nominals of this type are in either Class 1A (Low, Low) or Class IIb (High, High) e.g. moəda 1A, sports, moəda 1B, beak.

Loan words and other nominals unrelated to verbs may have fixed tonal patterns. These fixed patterns, five in number, have no tone-shift and remain firm in all positions. Study of these fixed patterns will be the subject of a subsequent article.

NOTES ON THE STRUCTURE OF SAHO*

WM. E. WELMERS, PH.D.

0. This study was made possible by a grant from the American Council of Learned Societies and by the generosity and hospitality of the American Evangelical Mission of the Orthodox Presbyterian Church in Eritrea. Research for it was done at Irafalo and Ghinda, Eritrea, during March-May, 1930. The principal informant was Asa Ḥamed, a native of Irafalo.

During the cooler months, the Saho people are concentrated largely on the coastal plains of Eritrea, to the southeast of Massawa. During the hot season many of them move to the hills farther inland. Saho is a Cushitic language of the Hamito-Semitic family, and is closely related to Afar (Dankali), which is spoken to the southeast along the coast, including the port of Assab. There are recognized dialect areas in each, and it may be that there is no sharp dividing line between the two, but that they are joined by a chain of dialects such that each is intelligible to speakers of adjacent dialects.

By far the most complete and important part of this analysis is the morphology of nouns and verbs. The underlying phonological analysis was of necessity made with considerable care, but there was no opportunity to make a careful check of every detail. Particularly suspicious points are noted here and there. Phonological features characteristic only of long utterances were not systematically studied, although a few notes were made of stress in short phrases and of some type of phrase division. It should also be noted that English equivalents (usually arrived at through Italian or Tigre or both) may be quite incomplete and in some cases inaccurate. Fortunately, they are largely irrelevant.

1. The phonemes of Saho are listed below. Included in parentheses are two

<table>
<thead>
<tr>
<th>CONSONANTS:</th>
<th>LABIAL</th>
<th>ALVEOLAR</th>
<th>RETROFRONTAL</th>
<th>LABIODENTAL</th>
<th>DENTAL</th>
<th>DORSAL</th>
<th>PHARYNGAL</th>
<th>GLOTTAL</th>
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<tr>
<td>Voiceless stops</td>
<td>t</td>
<td>d</td>
<td>g</td>
<td>f</td>
<td>s</td>
<td>h</td>
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<tr>
<td>Glottalized vels st.</td>
<td>t'</td>
<td>(c')</td>
<td>q</td>
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<td>Voiced spirants</td>
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<td>Glottalized vels sp.</td>
<td>s'</td>
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<td>Nasals</td>
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</tr>
</tbody>
</table>

Vowels: i e a o u
Stress: ' 
 Nasalization: ~

* Grateful acknowledgement is hereby made to the Wenzer-Gren Foundation for a grant-in-aid which has made possible the publication of this manuscript.
consonants that were recorded almost uniquely, in forms that were suspected of being citations from another language (i.e., not loanwords in the proper sense). In addition, |t̪|, |s̪|, and |x̪| are rare, and are apparently confined to loanwords; but there is no evidence that they have a different status than |j| and |q|, which are far from common. In some dialects, there is no contrast between |s| and |z|. Nasalization of vowels is very rare, but cannot be shown to be conditioned in any way.

1.1. |d̪| is a retroflex stop in initial, final, preconsonantal, and postconsonantal positions. It is a retroflex flap in intervocalic position. |qd̪| is a long retroflex stop. In contrast, |r̄| is an alveolar trill in initial, final, preconsonantal, and postconsonantal positions. It is an alveolar flap in intervocalic position. |rr̄| is a trill, not appreciably longer than the trill allophone of |r̄|, but limited to intervocalic position. In contrast with both of these, |d| is always an alveolar stop.

1.2. |b̪| and |v̪| are pharyngeal spirants similar to those that have frequently been described for Arabic. Adjacent vowels are strongly pharyngealized. This pharyngealization increases during a vowel before one of these consonants, and decreases during a vowel after one of them. Thus it is possible to hear a difference between the sequences |a̪v| and |a|, as in |dad̪a| 'the coastal rainy season' and |mar̄a| 'a marriage feast', but the difference is not as immediately apparent as with the voiceless |b| or with other voiced consonants. Sequences which I have transcribed as |a̪v|, |i̪a|, and |a̪a| may include some errors. In the case of vowels other than |a|, there are other allophonic features adjacent to the pharyngeal spirants as well as pharyngealization itself. Each vowel is a glide, and the glide is in opposite directions for vowels before |b| or |v| and for vowels after them. The terminus of the glide adjacent to |b| or |v| is somewhat lower than the rest of the vowel (and than its position adjacent to other consonants), and considerably fronted for back vowels. Thus the sequence |u̪a| has a glide much like that in English dew in the pronunciation of those who say |dew| rather than |d̄ew| or |d̄uw|; |u̪|, on the other hand, has a glide somewhat like that in English fluid, roughly the reverse in direction.

1.3. Vowels in other positions show little allophonic variation. They are approximately the sounds usually associated with the symbols used for them, but short and a little toward mid-central tongue position before a final consonant or a medial consonant cluster. Double writing of a vowel indicates length. Long vowels occur only before a single consonant followed by another vowel, as in many forms like |boobū| 'a hole'. Morphophonemic alternations limiting long vowels to this position are described in 2.6 below. For the interpretation of phonetically double or repeated vowels, which differ from long vowels, see 1.7 below.

1.4. Nasalized vowels are recorded only in the forms |bhāłyata| 'wind', |m̄ālāt̪a| 'time before dawn', and |ȳs̪yo| 'grass'. With the last of these compare |ȳs̄la| 'moon, month' and |aȳsin| 'envy'.

1.5. Consonants other than |x|, |b|, |h|, |v|, |w|, |y| occur both short (written singly) and long (written doubly), but the long consonants occur only in intervocalic position. Further details on |d̄| and |rr̄| are included in 1.1 above.

1.6. Stress in different positions is obviously the determining factor in construed such as those between |ȳb̄āḍa| 'my son' and |ȳb̄āḍa| 'my daughter'. Forms like these and also like |b̄āḍa| 'a son' are pronounced with an intonation much like the common English declarative intonation—the stressed vowel has the highest pitch, and the form ends with low pitch. But forms that are not clearly stressed on a vowel before the last one are pronounced in isolation with a final high pitch. The first impression for the speaker of English is that the last vowel is stressed. But the final high pitch, without a drop to low, may also be interpreted as conditioned by an absence of stress in the form. This interpretation, yielding many forms like |b̄āḍa| 'a daughter', is made more attractive by the fact that the same forms in many sequences (compare |ȳb̄āḍa| 'my daughter') obviously have no stress and have low pitch throughout. That the same forms may also occur in other sequences (always non-final) with the last vowel stressed (see 1.7 below) is beside the point; it happens to be more convenient to account for the appearance of such a stress than for its loss. Accordingly, forms with fewer than two stresses are interpreted as having either stress with a vowel other than the last, or no stress. In such short forms (mostly but not exclusively morphological words), stress has both a lexical and a morphological function. The lexical function appears in noun stems. Some, like |d̄ab̄a| 'a he-goat', have inherent stress; others, like |k̄ab̄a| 'a shoe', have no stress. Unstressed forms are somewhat more common. Morphologically, stress sometimes serves to differentiate a masculine from a feminine noun, as in the case of |b̄āda| 'son' and |b̄āḍa| 'daughter'; it also serves as part of the plural formation for many nouns, as in the case of |ārat| 'a bed' and |ārat| 'beds'.

1.7. Not included in the list of phonemes at the beginning of this section, because of inadequate evidence for many pertinent details, is what appears to be a juncture phoneme. Where there is clear evidence for something of the sort, it will be written with a space. Such cases include some morphological word boundaries, and also some divisions between stem and suffix. For the sake of convenience, some other morphological boundaries will be written with a hyphen. Such points are in clear contrast with space-juncture, and probably do not contrast with comparable points within a stem. Space-juncture is identified by two factors: (1) repetition of vowels, and (2) certain phenomena of stress and pitch. Evidence for each is as follows:

(1) A repeated vowel is interpreted as including a space-juncture in forms like |ȳeȳdo| obe |0| 'the sheep heard (it)' (not actually recorded but comparable to many forms recorded and others about which notes were made), because of a contrast with a long vowel in forms like |ȳm̄baa| 'blossoms'. The repetition of the vowel in forms like this often (but, my impression is, not always) includes a glottal stop. It may also be that all forms of this type have the stress and pitch requirements for space-juncture as well. On the other hand, repeated vowels in final position and before a final consonant seldom if ever include a glottal stop;
in spite of their phonetic difference from long vowels (1.3 above), they are apparently in complete complementary distribution with long vowels and also with the repeated vowels described above. Thus they need not be interpreted as including space-juncture. Examples are | adfi | (participle of | adu | 'go'), | sáá | (participle of | sa | 'enter'), | laa | 'cows', and | adilk | (perhaps a bound form, but occurring in | adilk-pee | 'I haven't gone'). This analysis is completely confirmed if my impression is correct that form | adi-k-ané | 'I'm going' contains a long vowel no different from and not contrasting with the long vowel in | bilo | 'blood'.

(2) Contrasts involving stress and pitch make it possible to write distinctions like the following (in which the hyphen in the forms on the right apparently represents nothing different from no hyphen or space):

| faras | vado | 'the horse is white' |
| fúnis | vado | 'the horses are white' |
| mila | fída-k-ané | 'I want jewelry' |
| adáí | fída-k-ané | 'I want to go' |

In the first of the above pairs, the form on the left has the pitch sequence low-high-low-high (each part pronounced as if in isolation), while the form on the right has the sequence low-low-low-high. But the unstressed character of each part of the form on the left is in sharp contrast with the stress in | 'addo-faras | 'a white horse'. In the second pair, the form on the left has the pitch sequence high-low-high, while the form on the right has the sequence high-low-low-low. In the third pair, there is only indirect evidence in my notes to confirm my memory that the form on the left has the sequence high-low-high-low . . . , while the form on the right has the sequence low-low-low-low. In the forms on the left of both the second and third pairs, the unstressed form again is pronounced as if in isolation. For the fourth pair there is even less evidence, but it is significant that the whole problem of juncture arose just after recording the form on the right and the comparable form | yábbá-saga | 'my father's cow'. At another time, the form on the left was recorded with the first stress louder than the second. My notes indicate nothing about the form on the right—perhaps the second stress is louder. In any case, I am confident that some phonemic contrast exists between pairs of sequences with two stresses, comparable in some way to the three better attested contrasts, and analyzable with a space-juncture in one type. It is hoped that problems of this type will underscore the necessity of a careful analysis of transitional phenomena on the phonemic level in any language analysis.

1.8. Similar problems of possible phonemic phrase divisions and of intonation have not been investigated. In a very general way, Saho intonations do not sound strikingly unfamiliar to a speaker of English. It is quite likely that they could be described in terms of three pitch levels (probably not as many as four, which English has) and two or three phrase-terminal contours. Fortunately, these questions are not directly relevant to the morphological analysis, which is as far as this article goes. In so far as the phonemic system has been determined in the description above, it may be safely used for purposes of transcription basic to further analysis, and forms so transcribed are set off in vertical strokes ( | . . . | ).

1.9. The points discussed in 1.1, 2, 3, 5, 6 above are illustrated in the following sets of forms, along with some illustrations of contrasts between simple and glottalized consonants. The contrasts illustrated include most of the difficulties that a speaker of English is likely to have in mastering the pronunciation of Saho. The illustrations are organized in such a way that they can conveniently be used as pronunciation drills for a person who has occasion to work on the language with an informant.

1. Contrasts between | dh |, | d |, and | r | in intervocalic position. | rádo-kio | I'll fall; | rádo-kio | 'I want it'; | rádo-kio | 'I'll bite it'; | rádo-kio | 'I'll go'; | dáapo-kio | 'I'll pour it'; | gáapo-kio | 'I'll ask'; | rádo | animal hides; | báda | son; | káapo | house; | báapo | hole; | báapo-da | daughter; | sáapo | place; | sáapo | went; | dáapo-fáapo | Trafalo, | báapo | arm; | duúf | filth; | idig | know; | báapo-se | 'I add' skin rug; | báapo | he caught (it), | báapo | he got well; | dáapo | coastal rains; | báapo | a sprout; | dáapo | flowing stream; | báapo | skin; | báapo | an end; | báapo | a female donkey; | báapo | bed; | báapo | black ant; | báapo | run; | báapo | door; | báapo | spear; | báapo | the itch; | báapo | shoveling; | báapo | stranger; | báapo | dog; | báapo | custom; | báapo | back tooth; | báapo | garments; | báapo | a patch; | báapo | tree; | báapo | horse; | báapo | meat; | báapo | he poured it (des); | báapo | fruit seed; | báapo | go; | báapo | country; | báapo | bed. | 

2. Contrasts between | d |, | d |, and | r | in initial position. | dáb | bend it; | dám | dissolve; | rág | die; | dór | choose; | dóo | suck on it; | róo | rain; | dil | ray; | díamo | guarantor; | fíeste | real property; | dòe | keep it out (it); | díí | choke; | ríí | root; | díí | say; | díí | beg; | díí | male camel; | dáb | gold; | dáb | food; | dálí | care for; | dálí | sideburns; | dálí | clarify (butter); | dálí | become cool; | dálí | death; | dálí | discussion; | dákíí | reward; | röoíí | permission (?). | 

3. Contrasts between | dh |, | d |, and | r | in final position. | dáb | the sea; | dáb | pour it (it); | dár | night; | dár | fall; | dár | goataking bag; | dár | begin; | dár | cry out; | ríí | root; | dór | a boil; | dígíí | play; | fíí | judge; | bííí | hold; | báapo | spears; | kó | saddle. | 

4. Contrasts between | dh |, | d |, and | r | in preconsonantal position. | madhíí | guarantor (in cattle deals); | madhíí | millstone; | aápíí | ground; | báapo | corpse, | báapo | grind, | aíre | ?; | dííí | tramp (in hand), | eííí | say (it), | ló | run. | 

5. Contrasts between | b |, | b |, and | g | in initial position. | báb | send away; | báb | help; | báamíí | ring; | báamíí | put; | báamíí | milk; | báamíí | converse; | báamíí | pigs. | 

Additional examples of initial | b |: | báb | leave; | báapo | meat; | báapo | meal; | báapo | hot season; | báapo | justice; | báapo | arm; | báapo | refuse; | báapo | rub; | báapo | female donkey; | báapo | legal sentence; | báapo | neighbor; | báapo | stars; | báapo | cubit; | báapo | corner. | 

6. Contrasts between | b | and | g | in intervocalic position. | dáb | gold | nábar |
the chest; [dehe] return (it) [robe] breath, spirit; [mahas] wages [maha] time before dawn.


18. Contrasts between single and double vowels:


19. Contrasts between single and double consonants.


[ifro] lightness, [hafr] be inflated.


Regular morphophonemic alternations of several types are recorded. There are perhaps a few more than those listed below, but they provide a fair idea of the total picture. A few others, along with numerous morphological and some suppletive alternations, are more conveniently treated as they arise in later morphological descriptions.

2.1. Assimilation of a consonant to a following consonant occurs in three recorded cases at morpheme boundaries. The symbol + indicates the morpheme boundary involved, and is not to be taken as part of the transcription. The symbol ~ is to be read ‘has the alternant.’

| [t] + [n] ~ [nn] | [benne] ‘we ate’, from [bet] ‘eat’ + [ne] ‘we (past)’. |
| [t] + [s] ~ [ss] | [besis] ‘feed him’, from [bet] + [sis] (causative). |
| [t] + [f] ~ [ff] | [dift-fara] ‘a black horse’, from [data] ‘be black’ (for loss of final [a] see 2.7 below) and [fara] ‘horse’. |

In spite of the analogy with the cluster [nd] in the stem [badda] ‘a corpse’. My notes include no case of the combination of morphemes involved.

2.2. Assimilation of a consonant to a preceding consonant occurs in at least three recorded cases at morpheme boundaries.

| [s] + [t] ~ [st] | [benisse] ‘you fed him’, from [bet] ‘eat’ + [sis] (causative) + [te] ‘you singular, past’. |
| [d] + [t] ~ [dt] | [radde] ‘you fell’, from [rad] ‘fall’ + [te]. |

My notes also include the statement [s + t] ~ [st], but I find no case to prove it. The cluster [st] is permitted in the form [stado]ki ‘I’ll work’. For the form [te] in the above examples, compare [kor] ‘mount’ and [korte] ‘you mounted’.

2.3. One case of metathesis is recorded at a morpheme boundary.

| [d] + [n] ~ [nd] | [hadde] ‘we poured it out’, from [had] ‘pour out’ + [ne] ‘we (past)’. |

2.4. Morphemes with a final vowel add [y] before a suffix consisting of a consonant plus a vowel. Some notes seem to indicate that [y] in these forms may change further to [ii], though the two sequences seem to contrast in some positions. Examples of this alternation are: [sayte] ‘you entered’, from [sa] ‘enter’ + [te] ‘you (s., past)’; [sayte] ‘we entered’, from [sa] + [ne] ‘we (past)’; [dyute] ‘you herded (cattle)’, from [du] ‘herd’ + [te] + [dyutne] ‘we herded (cattle)’ from [du] + [ne]; [loyte] ‘you counted’, from [lo] ‘count’ + [te] + [gyen] ‘we found it’, from [ge] ‘find’ + [ne]; [lyte] (or [lite]) ‘you swept it’, from [li] ‘sweep’ + [te] + [giriryo] ‘a fire’, from [gir] ‘fire’ + [to] (unit suffix) + [balmayto] ‘a leaf of a (certain) greens’, from [batta] ‘greens’ + [to]; [eyditya] ‘a male colt’, from [edo] ‘colt (s.)’ + [ta] (unit suffix).

That the [y] in these forms is not part of the suffix is clear from a comparison of the following forms: [akte] ‘you opened it’, from [ak] ‘open’ + [te]; [akne] ‘we opened it’, from [ak] + [ne]; [basilto] ‘an onion’, from [bas] ‘onion’ + [to]; [saltta] ‘a bean’, from [sat] ‘beans’ + [ta].

My notes suggest a similar addition of [y] in some cases and [y] in other cases between a stem-final vowel and a vowel suffix. The most certain point is that stem-final [a] may be immediately followed by a suffix [as] or [sas], the particle form of [as] ‘enter’. The interpretation of the other sequences depends in part on a careful check of all records to see such as [e] and [iy] exist in the language at all. Where no morphophonemic alternation is involved, I have recorded at least some cases of each type, but had no opportunity to recheck all them. Where morpheme boundaries are involved, only a tentative interpretation can be suggested. By this interpretation, the following sequences are written:

[iye, eye, ayè], but [oe, ue]
[jio, ejem, we, wio, uwo]
[ja, en, sa, sa, uta].

Examples of these sequences in recorded verb forms are:

[iye, geye, saye] but [loe, deve] ‘he did’ + ‘sweep, find, enter, count, herd’.
[fio, geo, sao] but [lono, dwuo] ‘he should’ + ‘the same’.

[fia, gea, saa, loa, dua] : particle forms of the same.

2.6. [h] has a zero alternant before [h, b, x, t], and apparently also before a vowel in at least one construction, though intervocalic [h] is common elsewhere. With forms like [yabba-saga] ‘my father’s cow’, which show [b] before other consonants, compare the following without [h]: [yabba-çere] ‘my father’s house’; [yabba-bahama] ‘my father’s pigs’; [yabba-xasimi] ‘my father’s ring’.

2.6. Some stems have an inherent long vowel before a final consonant, but the long vowel appears only in forms with a suffix consisting of or beginning with a vowel. Such long vowels have short alternants in forms that have no suffix or that have a suffix beginning with a consonant. Examples are:


Other stems have an inherent short vowel that appears in all forms:

...forms with stress are regularly masculine.

(2) Forms without stress and with a final vowel are regularly feminine. In a few apparent exceptions, the final vowel is preceded by a double consonant: [abba] ‘father’ and [wanna] ‘master of the house’ are masculine. Morphophonemically, the final vowels are not inherent parts of the stems; but other forms like [lilat] ‘a spring’ are feminine, and in them the final vowel belongs to the stem.

(3) Forms without stress and with a final consonant are usually masculine. Most of the exceptions listed below are known to be loans from Arabic feminine nouns. In addition, the Arabic loan [fara] ‘horse’ may be used with either pronoun, depending on the sex of the horse being talked about. Feminine nouns without stress and with a final consonant are as follows: [iasas] hour (also [iasasa]), [qorarar] bottle, [jabar] coffee pot, [qosiat] paper, [kofey] cap, [maqet] sickle, [karet] yoke, [maqian] millstone, [lab] sheep.

3.2. A subject form in distinction from a general form appears only with nouns that are stressed and have a final vowel. In the subject form, the final vowel is replaced by [i] and the stress is lost. Thus the subject form of [fare] ‘house’ appears in [fari nabar] ‘the house is big’, and of [bakkel] ‘rabbit’ in [bakkel] ‘the rabbit is white’.

3.3. Number distinctions form the basis for a division of nouns into three classes, which may be called mass nouns (having only one form), class nouns (having a derived unit form), and unit nouns (having a derived plural form). Some nouns have forms in both of the last two groups. There are also formal subclasses of class nouns and unit nouns. The following subsections describe the classificatory criteria and list the recorded nouns in each class and subclass.

3.3.1. The following mass nouns (nouns having only one form) are recorded.

3.3.2. Class nouns in their stem form indicate an unspecified quantity or an item for which number is irrelevant. Unit forms, indicating a single specimen of the forms, are formed by adding one of two suffixes, [to] and [ta]. For the addition of [y] after vowel-final stems, see 2.4. Above. In a few cases, morphological alternation occurs. The unit form of the stem form is not predictable from anything in the stem, but masculine unit forms predominate. In some cases, unit forms exist for both genders, indicating sex difference unless otherwise specified. In the lists below, the gender of both the stem forms and the unit forms may be determined from the statements in 3.1. Above. The translations generally attempt to give equivalents for the stem forms.


3.3.3. Unit nouns are nouns that appear in two forms, singular and plural. For personal nouns, the plural form has a singular pronoun. For impersonal nouns, the plural form has a singular syntax and gender. The term plural reflects the morphological parallelism with the syntactic plurals of personal nouns, not merely a semantic category. Indeed, in some cases the plural form has a collective or a distributive, rather than a numerical, reference. There is a rather complex variety of plural formations, for some of which the possibility suggests itself that the plural form be considered basic and the singular form derived (compare 3.3.2 above). Taking all of the formations together, however, it seems more economical to consider the singular form as basic. Neither form is invariably predictable from the other, but the degree of predictability is far higher from the singular form. For each of the commonest types of phonemic structure in the singular form, one type of plural tends to predominate. The most convenient statement of these facts seems to be in terms of five general types of plural forms, with subtypes for each. These types will be labeled with roman numerals, and for mnemonic purposes may be referred to by the following names: (I) masculine vowel-change plurals, (II) masculine suffix plurals, (III) feminine suffix plurals, (IV) masculine infix plurals, and (V) irregular plurals. The following statements give a somewhat fuller, but still very rough, summary of these types, with an indication of the main correlations between singular and plural forms.

(I) Masculine vowel-change plurals have masculine singular gender (for impersonal nouns) by virtue of both a final consonant and stress (except for one unstressed sub-type). In most sub-types the vowel before the final consonant differs from that of the singular; it is most commonly [o]. This is the predominant type for singular forms that have two or more vowels before the last consonant, the last of which is [a] ; for singular forms with one vowel which is inherently short; and for other singular forms with final [i] or [u].

(II) Masculine suffix plurals also have masculine singular gender (for impersonal nouns) by virtue of both a final consonant and stress. The suffix is [it]. All of the singular forms have a final vowel, and most are masculine. Otherwise, the types of structure in the singular overlap those found in I, so that the choice between I and II is lexical.

(III) Feminine suffix plurals have feminine singular gender (for impersonal nouns) by virtue of a vowel suffix (most commonly [a]) and absence of stress. This is the predominant plural type for singular forms that have two or more vowels before the last consonant, the last of which is not [a] ; for singular forms with one vowel that is inherently long; and for other singular forms with final [i], [e], or [u] (compare the statements for I above).

(IV) Masculine infix plurals have masculine singular gender (for impersonal nouns) by virtue of stress. Stressed [a] is infixed between the consonants of a medial cluster, or after a single medial consonant. Most singulaires with a medial cluster and a final consonant have this type of plural, though others are also
NOTES ON THE STRUCTURE OF ...
are such that, at least to a large extent, the choice between 1a and 1b is morpho-
phonemic. The choice of the plural vowel shows more morphophonemic cor-
relation than in 1a, but lexical determination is still found.

1b. Plural with [i]. Note the predominance of nouns referring either to per-
sons or to parts of the body.

1b1. Singular with one vowel before the last consonant, which is followed by
final [a] or [o], and which is either single or double. [ano] [donom] head, [ins] [mon] mother, [kko] [kok] front tooth, [daga] [dog] go, [ko-box] base of the neck, [gba] [boba] hand, [isa] [aso] bone, [yado] [yado] (?) rump, [rando] [rando] hide, [fara] [faro] place, [aba] [ma] [koba] father, [ama] [domon] aunt, [wanna] [wanon] master of the house.

1b2. Singular with one vowel before the last consonant, which is final. In this
subclass, alone of all in 1, the plural is unstrengthened. [af] [afou] mouth, [lak]
[lak] foot, [nee] [nou] face, [san] [san] nose, [jil] [jil] pocket.

1b3. Plural with [u]. The few cases recorded are like 1b1, but have final
[u] in the singular. [amu] [amug] breast, [dmun] [dnumun] cat.

1b3. Plural with [i]. The few cases recorded are like 1b1, but have final
[i] in the singular. For those that end in [i], the plural form would be identical
for this class and for II, for which see below. Because of the limitations in II,
feminine (unstressed) nouns with final [i] are put in this class, but masculine
(stressed) nouns with final [i] are put in II. [roomi] [roomimi] large knife, [iay]i
[iayit] ear, [iini] [finit] eye.

1b4. Plural with [e]. Few plural cases are like 1b1, but have final
[e] in the singular. [dage] [dages] compound, [surer] [surer] trousers.

1b5. Plural with [s]. As for 1b1, there are two sub-types.

1b5.1. The singulars are similar to those in 1b1, including the final [a] or
[o], but differ in having a long vowel before the last consonant in both singular
and plural. One exception has a double consonant. [bodo] [bodadi] hole,
[lele] [leled] patch, [kene] [kene] arm, [kooma] [kooma] hill, [seela] [seela]
saddle, [illa] [illa] spring.

1b5.2. The one recorded case has one long vowel before its final consonant,
like one of the cases in 1b1. As in 1b1, the plural is unstrengthened. [kor] [korr] saddle.

II. Masculine suffix plurals.

IIa. With masculine singular forms. The suffix [it] replaces the final vowel of
the singular. For singulars with final [i], compare 1b3 above, [ilfent] [ilfent]
lid, [ayas] [ays] (f [ays]) [ayit] baby, [disti] [disti] pan, [das] [dadi] stone, [filsa]
[fils] neck, [palambi] [balsnit] whip, [ligidda] [ligdi] year, [laasnit] [laasnit]
porcupine, [lonya] [lonit] herdsmen, [maddira] [maddiri] master, [naabtoli]
[naabtoli] enemy, [gorina] [gorini] builder, [eyadado] [eyadit] woodworker,
[sayit] [sayit] priest, [sile] [sile] picture, [santit] [santit] knife, [wakkyana]
[wakkynt] switching, [das] [aditi] (mphxctl alt.) back tooth.

1b1. With feminine singular forms. Only the first two, the examples follow the
predominant pattern of IIa above. In the next two, the suffix [it] is added after
the complete singular form, and in the others there are other morphological alterna-

tions. But for feminines with final [t], compare 1b3 [maxaddat] [maxadtit] pillow,
[mallalat] [mallatidit] razor, [robra] [robrat] rainbow, [bada] [budit] tree,
[dakjaqui] [dakjat] minute.

III. Feminine suffix plurals.

IIIa. Singular with two or more vowels and final consonant. Contrast the
singulars in 1a1.1, 1a2.1, 1a3.1. Here the last vowel is not [a], with one excep-
tion which shows morphological alternation, and it is long in many cases. The
plural suffix is normally [a]; two recorded cases with [u] are appended here to
save a separate class. [arot] [arotu] yoke, [aura] bull, [dudil] [duduba]
plain, [gulub] [gulubu] knee, [bolumi] [bolumi] corner, [bulu] [bulu] cubit,
[gi] [giga] lake, [jugu] [jugu] king, [raku] [rakija] pipe, [mphi] (mphxctl alt.)
man, camel, rimid [rimidi] root, [saabeb] [saabebu] friend, [qalibi] [qaliba] pipe,
[mugen] [mugenu] snare, [masawid] [masawida] mouse trap, [akat]
[akcat] (mphxctl alt.) rope, [seemau] [seemau] mat, [leemau] [leemau] (mphxctl alt.) lamb.

111b. Singulars with consonant cluster followed by a vowel. Compare the sin-
gulars in 1a1.3, 1a2.3, 1a4.3. The choice of this type rather than one of the
former is lexically determined, but this group also shows morphological alternation
in all cases. [bada] [badama] corpse, [jarake] [jaraka] constant companion,
[amidda] [amida] forked pole, [sariddo] [sarida] cedar (?).

111c. Singulars with a vowel and final consonant, in which the vowel is
inherently long. Contrast the predominant structures in 1a1.4, 1a2.4, and 111.2, which
include only one case with a long vowel. [dik] [dika] extended family,
[kiso] [kisai] sack, [lub] [luba] board.

111d. Singualrs with two vowels, the second final, and a single medial conso-
nant. Contrast the structures in 1a1.2. Compare also the structures in 1b1.1,
where all singulars are unstrengthened. In the following, all singulars are stressed
except for one that is irregularly masculine. In every case but the last, the final
vowel of the singular is replaced by [u] and the suffix [a] added to that. [gadi]
[gadu] wadi, [gile] [gila] wing, [karake] [karasa] dog, [maru] (m) [marasa] ram,
[are] [aratu] house, [dele] [dele] well, [std] [stia] skin rug.

IV. Masculine inflexion plurals (with one exceptional feminine sub-class). There
are so many morphological alternations that any classification is bound to be
arbitrary at some points. In general, the lists themselves will have to supplement
the brief descriptions.

IVa. Infixed [a], last vowel [a] ~ [i], but [e] retained. [barrad] [barad] tea
tottle, [madhab] [madhain] large millstone, [mustah] [musta] key, [ma1det]
[ma1det] sickle, [gar1ena] [gar1e] thief, [xatim] [xatim] ring, [manofio]
[manafio] sieve, [kabaya] [kabai] metal cup.

IVb. Infixed [u], last vowel [a] ~ [i], but [i] retained. [bisamir] [bisamir]
naill, [mwasu] [mwasu] shawl, [zambil] [zambili] (m ~ n) basket, [fijan]
[fijan] coffee cup.

IVc. Infixed [d], after a medial consonant. [qamal] [qamal] shirt, [badila]
[badila] shovel, [mizan] [mizan] (with [u]) scale.

IVe. Infixed [k:] and suffix [t], plural irregularly feminine. [da:nys] (m) [da:nýtít] (f) judge, [mar:twi] [mar:twit] (f) bridegroom.


V. Irregular plurals.

Va. With morpholexical alternation. [barnét:] [barnét:] hat, [imbi:] [imbi:] horn, [c'si:'] [c'si:] chick, [sá:ri:] [sá:ri:] garment, [ge:] [ge:] stranger.

Vb. With suppletive alternation. [aw:kas] (f [aw:kas]) [irirí] (m) child (boy, girl), [la:k:] (f [ba:k:] [d'yar:] child (son, daughter), [la:n:] [la:n:] egg, [ita:] (f) [ala:] female goat, [nú:] [nú:] woman, [la:] [la:] cow.

(to be continued)

REVIEWS


Interlingua is the final product of more than twenty-five years of serious and painstaking, though at times imperatively coordinated, research involving the cooperation of well-trained specialists and high ranking professional linguists of the calibre of Edward Sapir, Otto Jespersen, or Nikolaas Van Wijk. If linguistic scholarship and hard work were the only ingredients necessary to secure the success of such an enterprise, we could expect Interlingua some day to become the general medium of international communication. Unfortunately, the real problem, which is convincing the world that it needs an auxiliary language, is far too complex to be solved by a body of linguistic specialists. The common mistake of nearly all language-makers is to assume a demand where there is practically none. Well publicized and perfectly utilisable artificial languages have now been in existence for more than seventy years. Everybody knows about Esperanto, but no one, except a handful of idealists, ever bothers to learn it. The reason for this is not hard to find: except for professional linguists and a few amateurs, a language is never an end in itself. It is a tool with which one expects to achieve definite aims. An American planning a trip to Europe may decide to learn some French because he expects a knowledge of that language to make his tour more pleasant or intellectually and artistically more profitable. A physician may decide to learn German, a language through which he may hope to increase his professional competence. But who will take the trouble of learning even the simplest language if it does not give him access to new values? Would it not therefore be sound, before launching into the shaping of a new language, to investigate whether new values can be created which could be reached only through the proposed linguistic medium. If none can be thought of, it would certainly be wise to desist from the start. No individual or association, however powerful financially or otherwise, can hope to prevail upon a large body of people with prestige to use, in their contacts with fellow humans, the new medium exclusively. Whether it would be possible to persuade some outstanding thinkers with important messages to the world to let these messages be diffused in the new language is not certain, but should at least be investigated. Were such an approach to prove practicable, it would to a large extent determine the form to be given to the language. The latter should of course be made easiest for those who can be expected to respond most readily to the messages. The type of message to be conveyed would determine whether emphasis should be placed upon ease of aural or visual understanding, or both. Since it is as a rule incomparably
NOTES ON THE STRUCTURE OF SAHO (CONCLUDED)

Wm. E. Welmers, Ph.D.

4. The morphology of verbs involves stems of two classes, two types of form affixes, and affixes corresponding to subject pronouns. The two classes of stems may be most simply distinguished by the fact that subject pronouns are suffixed to the first and prefixed to the second. The subject pronouns can best be treated first; the following forms illustrate them with a stem of each class:

<table>
<thead>
<tr>
<th>Independent Pronoun</th>
<th>Class I stem [hab:] 'leave'</th>
<th>Class II stem [ub:]- 'see'</th>
</tr>
</thead>
<tbody>
<tr>
<td>1s [anu]</td>
<td>[hab:] I left</td>
<td>[ub:] I saw</td>
</tr>
<tr>
<td>2s [atu]</td>
<td>[habte:] you left</td>
<td>[ubte:] you saw</td>
</tr>
<tr>
<td>3ms [asuk]</td>
<td>[habte:] he left</td>
<td>[ubte:] he saw</td>
</tr>
<tr>
<td>3fs [as]</td>
<td>[habte:] she left</td>
<td>[ubte:] she saw</td>
</tr>
<tr>
<td>1pl [anu]</td>
<td>[habne:] we left</td>
<td>[ubne:] we saw</td>
</tr>
<tr>
<td>2pl [atim]</td>
<td>[habten:] you left</td>
<td>[ubtln:] you saw</td>
</tr>
<tr>
<td>3pl [daun]</td>
<td>[haben:] they left</td>
<td>[ubten:] they saw</td>
</tr>
</tbody>
</table>

A comparison with other forms of the same verbs makes it possible to identify the stems as cited above, and also a suffix [e], with the alternant [i] before final [n] with verbs of Class II only. The suffix is discussed in 4.3.2 below. A further comparison of the plural with the singular forms above suggests the isolation of a plural morpheme [n] in final position in the 2pl and 3pl forms. A complicated statement could be devised to include in this morpheme also the [n] in the 1pl forms which has a different position. But it is simpler to take the 1pl [n] as a different morpheme, comparable to the [t] in the 2s and 3s forms. This interpretation leaves us with four basic pronoun morphemes, describable as follows:

'I': zero
'we': [n]
'you, she': [t]
'he': [y] (prefix) ~ zero (suffix)

As suffixes, these pronoun morphemes immediately follow a stem (or a consonantal suffix; see 4.2 below), preceding a vocalic suffix (as /e/ above; see 4.3 below); as prefixes, they are initial in any form. The plural morpheme /n/ may be used with the last two; its position is always final, following a vocalic suffix; [t] with [n] refers only to the second person, and [y] ~ zero with [n] refers to either males or females of the third person (for the use of imperative plurals without a plural morpheme see 3.1 and 3.3.3 above). A similar analysis could reasonably be applied to the independent pronoun forms, but a number of morphophonemic statements would obviously be required. It should be noted that forms for 'you (sing.)' and 'she' are always identical, and that those for 'I'

and 'he' are identical for stems of Class I. These morphemes are regular for all verb forms.

The following sections describe (1) verb stems of each class, (2) consonantal affixes with stems of each class, and (3) vocalic affixes with stems of each class. Consonantal affixes represent distinctions generally describable as 'voice'; the resultant forms may be labeled General, Intransitivized, Causative, Subjective, and Intensive (the last only in Class II). A form is General unless otherwise specified. Intransitivized forms seem to occur quite freely with any stem used with an object; these have not been separately listed, but most of them can be predicted from the translations. Other forms require special listing. With each of these consonantal affixes, vocalic affixes may also be used, apparently with only stylistic limitations, representing distinctions generally describable as 'mode' and 'aspect'; the resultant forms may be labeled Imperative, Perfect, Imperfect, Jussive, and Participle. In conjunction with these forms, verbal constructions including negatives are treated. A description of a few irregular verbs concludes this outline of the morphology of verbs.

4.1. Verb stems and verb classes. The criteria for classifying a stem are given above. Only stems recorded in the General form are listed here. A few others are listed with the discussion of other forms in following sections.

4.1.1. Verbs of Class I (suffixed). All stems with an initial consonant belong in this class, but the class also includes some stems with an initial vowel. The stem is derivable from any form that has a suffix consisting of or beginning with a vowel. Only before such a form can an inherently long vowel be recognized (cf. 2.4 above). The imperative includes only the stem, but does not show the length of its last vowel. Thus the form [alite:] 'he closed (it)' shows a stem [alit-] 'close'; the imperative is [alit]. Similarly, [beete:] 'he ate (it)' shows a stem [beet-]; but the imperative is [bet].

The following list gives key forms for stems of Class I. The stem, not given separately, is readily derivable by the statement above. In each case the imperative is given first, followed by the third person masculine singular of the perfect.

The notations which follow the perfect in some instances indicate whether 'voices' other than the Intransitivized are recorded with the stem: C' and C" indicate two types of Causative, S indicates Subjective, and C with an accent indicates a complex Causative Subjective. Most stems with final [s] might be analyzed as Causative, and those with final [t] as Subjective, from stems not occurring in the General form. In a few cases, the forms given are hardly normal speech forms. Note that all forms (and stems) are unstressed.

[ab] [abe] do, make; [asab] [asabe] spoil; [abar] [abare] curse; [abas] [abaase] finish; [afi] [afaite] hurry; [al] [alae] parch, roast; [alaa] [alaae] (C') become cooked, heated; [ale] [aleele] reach (for); [alii] [aliff] close; [andab] [andabe] call or speak to name; [andugul] [andugule] be sleepy; [jar] [jare] bite; [jase] [jasene] envy; [bad] [bade] (C') die (of an animal or fire); [basb] [basbe] (C') bring; [bake] [bake] (S) finish, eat; [balig] [baligbe] swell (as grain in water); [baqar] [baqare] be thirsty; [beet] [beete] (C') eat; [beyt] [beyte] take away; [biak] [biakke] (S) injure; [biayesi] [biayesite] forget; [bili] [bile] (C') bleed; [bolol] [bolole] (C', C") blaze up; [boto] [botoe]
In addition, a few comparable forms are recorded with stress. In every case but one, there is a resemblance to Causative forms. There is also some evidence (possibly from expressions I heard but neither recorded nor remember) that these stems are related to or derived from adjectival stems. Since only one 'voice' is recorded for each, they are tentatively listed here as a special type of Class I stems, with stress: [nilis] [nilis] scratch; [galaba] [galaba] go fast; [h[W]i] [h&W]i] raise; [l&W]i] [l&W]i] lower; [n&W]i] [n&W]i] lift up; [sikia] [sikia] make quiet.

4.1.2. Verbs of Class II (prefixing). All stems in this class have an initial vowel, and no stem contains the vowel [i]; [o] in a stem is not common. In most cases, all vowels in the stem are the same. A comparison of forms for various stems shows three subclasses differing as follows:

Ia. The stem is equivalent to the imperative (the last vowel is always short). The stem has the structure VCVCVC, VCV, VCVCVC, VCVCVC, or VCVCVC. Of these structures, the first is by far the commonest, and the second is an expected variant. For the third, it is possible that I have recorded the second vowel erroneously; the release of the first of two consonants often sounds like a vowel. In the list of these stems below, the order follows these structural types. These may be called 'full stems'.

Ib. The stem is derivable from the imperative and a form with a suffix consisting of or beginning with a vowel. The stem of this second is not enough, because other shows alternates that obscure the stem vowel. It is necessary, however, because of a very few stems in which the last vowel is long. The stem has the structure VCVCVC or VCV in most cases, but VCVCVC in a few cases. The perfect forms also have an initial long vowel (unique for verb stems of this type, not a regular morphophonemic alternation) in almost all cases. Those recorded with an initial short vowel should be considered suspect for the time being; if they are wrong, they have nothing to do with the form of the stem. In the list of these stems below, the last should be reckoned for one reason or another. These may be called 'short stems'.

Iic. The stem is derivable from a form with a suffix consisting of or beginning with a vowel. The stem is this form minus the suffix. The imperative form adds a vowel to avoid a final consonant cluster. The stem has the structure VCV or VCVCVC. These may be described as 'stems with final consonant cluster'.

In the lists below, in addition to the imperative and perfect first singular, in some instances a third form is included to indicate stems that have a special alternant in the Imperfect form, which will be discussed below. The derived forms for verbs of Class II are C (Causative), S (Subjective) 1 (Intensive), and CI (Causative Intensive).

Iia. Full stems: [eI][eI] [eI][eI] be annihilated; [eI][eI] [eI][eI] become smaller; [eI][eI] [eI][eI] be sad; [eI][eI] [eI][eI] think; [eI][eI] [eI][eI] forgive; [eI][eI] [eI][eI] (l)ight; [eI][eI] [eI][eI] turn sour; [eI][eI] [eI][eI] hold; [eI][eI] [eI][eI] throw by hand; [eI][eI] [eI][eI] grind; [eI][eI] [eI][eI] judge; [eI][eI] [eI][eI] (C) untie; [eI][eI] [eI][eI] (C) try; [eI][eI] [eI][eI] (C) kill; [eI][eI] [eI][eI] (C, I) break; [eI][eI] [eI][eI] (S) cut off; [eI][eI] [eI][eI] (C) repay;
### Regular Intransitivized forms for Class I stems are illustrated by the following:

<table>
<thead>
<tr>
<th>Stem</th>
<th>Intransitivized stem</th>
<th>Intransitivized perf.</th>
<th>Meaning of perfect</th>
</tr>
</thead>
<tbody>
<tr>
<td>beat-</td>
<td>beatim-</td>
<td>beatime</td>
<td>it (f) was eaten</td>
</tr>
<tr>
<td>aif-</td>
<td>aifim-</td>
<td>aifime</td>
<td>it was cold</td>
</tr>
<tr>
<td>daam-</td>
<td>daamim-</td>
<td>daamime</td>
<td>it was bought</td>
</tr>
<tr>
<td>fab-</td>
<td>fabim-</td>
<td>fabime</td>
<td>it (was) boiled</td>
</tr>
<tr>
<td>had-</td>
<td>hadim-</td>
<td>hadime</td>
<td>it (was) poured out</td>
</tr>
</tbody>
</table>

For Class II, the recorded Intransitivized forms include some from stems not recorded in the General form. Such stems are listed with an asterisk. The regular formations recorded are as follows:

<table>
<thead>
<tr>
<th>Stem</th>
<th>Intransitivized stem</th>
<th>Intransitivized perf.</th>
<th>Meaning of perfect</th>
</tr>
</thead>
<tbody>
<tr>
<td>*a-</td>
<td>*aef-</td>
<td>*aefime</td>
<td>it came loose</td>
</tr>
<tr>
<td>*lid-</td>
<td>*lidif-</td>
<td>*lidifime</td>
<td>he was killed</td>
</tr>
<tr>
<td>*iif-</td>
<td>*iifim-</td>
<td>*iifime</td>
<td>it was repaid</td>
</tr>
<tr>
<td>*iik-</td>
<td>*iikif-</td>
<td>*iikifime</td>
<td>it turned over (of itself)</td>
</tr>
<tr>
<td>*is-</td>
<td>*isif-</td>
<td>*isifime</td>
<td>it was sprained</td>
</tr>
<tr>
<td>*ile-</td>
<td>*ileif-</td>
<td>*ileifime</td>
<td>it became separate</td>
</tr>
<tr>
<td>*i-</td>
<td>*iime-</td>
<td>*iime</td>
<td>it travelled</td>
</tr>
<tr>
<td>*iibid-</td>
<td>*iibidif-</td>
<td>*iibidifime</td>
<td>it (was) changed</td>
</tr>
<tr>
<td>*em-</td>
<td>*emif-</td>
<td>*emifime</td>
<td>it was surrendered</td>
</tr>
<tr>
<td>*aen-</td>
<td>*aenif-</td>
<td>*aenifime</td>
<td>it was thought about it</td>
</tr>
<tr>
<td>*aem-</td>
<td>*aemif-</td>
<td>*aemifime</td>
<td>it was paid attention</td>
</tr>
</tbody>
</table>

In the following case, the stem shows an irregular alternant:

<table>
<thead>
<tr>
<th>Stem</th>
<th>Intransitivized stem</th>
<th>Intransitivized perf.</th>
<th>Meaning of perfect</th>
</tr>
</thead>
<tbody>
<tr>
<td>*aibid-</td>
<td>*aibidif-</td>
<td>*aibidifime</td>
<td>it was held (?)</td>
</tr>
</tbody>
</table>

In two cases, neither recorded in the General form, the Intransitivized affix is accompanied by internal reduplication, a characteristic of the Intensive form discussed later:

<table>
<thead>
<tr>
<th>Stem</th>
<th>Intransitivized stem</th>
<th>Intransitivized perf.</th>
<th>Meaning of perfect</th>
</tr>
</thead>
<tbody>
<tr>
<td>*aene-</td>
<td>*aeneif-</td>
<td>*aeneifime</td>
<td>he stretched himself</td>
</tr>
<tr>
<td>*aalek-</td>
<td>*aalekif-</td>
<td>*aalekifime</td>
<td>it was mistaken</td>
</tr>
</tbody>
</table>

In a few forms, the Intransitivized affix is prefixed to the entire stem; in one
case, it is recorded as double and the stem shows a long vowel that is not recorded in the General form:

<table>
<thead>
<tr>
<th>IIb</th>
<th>-akum-</th>
<th>-oomoko-</th>
<th>yoomokoome</th>
<th>he raced (with)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-u'uf-</td>
<td>-oomoe-</td>
<td>yoomoeoe</td>
<td>be breathed hard</td>
<td></td>
</tr>
<tr>
<td>-u'ug-</td>
<td>-uuma'ug-</td>
<td>yuma'uge</td>
<td>he was buried</td>
<td></td>
</tr>
</tbody>
</table>

Some of my earlier notes record a double medial consonant in some of the regular Class II Intransitive forms. If this is not an error, then I would suspect another morpheme present in forms like yingiddife (?!) 'he was killed'.

4.2.3. The Causative form has an affix which is analyzable as basically [s]. For stems of Class I there are actually two affixes, [s] and [si]. These are largely, but not completely, in complementary distribution in terms of the syntax of the stem, and should therefore be considered together. [s] occurs in its basic form after a vowel, usually in the alternant [s] after a consonant, but in the alternant [s] after a consonant if the preceding vowel is [a]. It makes a transitive alive from an intransitive verb, the form will be called Causative5. [s] is recorded only after consonants, with the alternant [sa] in the one case where the preceding vowel is [a]. It makes a causative from a transitive verb, but in three recorded cases also from an intransitive verb with a C form in [s]. Forms with [s] will be called Causative. For a complex Causative Subjective form, see the discussion of the Subjective below.

For stems of Class II, the normal formation seems to be [s] prefixed before [b, d, k, g] (and presumably [, b, x]), with the alternant [y] prefixed before other consonants, and [y] prefixed to the entire stem for some stems classified as IIb. Details and irregularities are given with the lists below.

The recorded Causative forms of each of the two types for stems of Class I are as follows, the stem being followed by the Causative imperative in each case, with cross-references to other derived forms; a special stem alternate [sandi-] is noted for the stem [sandi-]. The C forms follow: [aagag-] [agagis] make level, straighten; [alaa-] [alaa] cook, heat; [bad-] [badis] put out (fire, lamp); [bill-] [billis] cause to bleed; [bolol-] [bololis] (CM) make (fire) blaze up; [baab-] [baabis] (S) bend (something); [deef-] [deefi] set down; [derigir-] [derigiris] (S) spin (something); [dam-] [damis] dissolve (something); [dii-] [dis] (S) choko (as with the hands); [edde]- [eddis] begin (something); [fabi-] [fabis] boil (something); [gaab-] [gaabis] keep; [haafl-] [haafis] blow (a horn); [bankabi-] [bankabis] (S) frighten; [kaf-] [kafis] dry (something); [komobolbol-] [komobolbis] (S) roll (something); [laabuu-] [laabuis] (S) make sick; [mak-] [makis] make turn, screw, twist, bend; [makiteel-] [makiteelis] (S) cause to wander around (?); [oob-] [oobis] put down; [ogaa-] [ogaas] (S) cause to get up (?); [akali-] [akalis] (S) clean, cleanse; [sand-] [sandis] (I) tear; [fanyal-] [fanyalis] (S) spoil (something); [feeg-] [feegis] bend (something) down; [vidda-] [viddais] be surety for (someone); [sara-] [saris] (C, S) cloth (someone); [eug-] [eugis] (S) keep; [auu-] [auuis] (S) hide (something); [urru-] [urruis] (C) make well; [urr-] [urruis] smell

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The following are the C forms in similar arrangement. [baah-] [baahis] have (someone) bring; [bret-] [bretis] cause to eat, feed; [bololol-] [bolololis] (C) have (someone) make (fire) blaze up; [daam-] [damis] (S) have (someone) buy; [daawu-] [daawuis] give (someone something) to care for; [hbay-] [hbayis] (C) cause (someone) to put on (clothes); [jaa-] [jaaris] (C, S) cause (someone to dress); [jurr-] [jurrus] (C) have (someone) cure, heal.

Regular Causative formations illustrating the affix alternant [s] with stems of Class II are as follows: other derived forms are of insufficient frequency to make cross-referencing particularly useful:


IIc: [-ekett-] [-eketts] gather.

Regular Causative formations illustrating the affix alternant [y] with stems of Class II are as follows:


IIC: [-ubul-] [yubulis] show.

Causative formations with the affix alternant [y] are recorded also in the following special cases:

Where [s] is expected before [g]: [j-igdifi-] [j-yigdifi] cause to kill.

In conjunction with the intransitivizing affix [-ifu-] [yifoo] cause to breathe hard.

With three stems classified as IIb: [j-enebe]- [j-enebe] cause to grow; [j-otob]- [j-yotob] cause to repent; [j-emebi]- [j-yemebi] repair (cf. [mebe] 'good').

With a stem having the unique structure VCVVCV: [*j-deeweebe]- [j-ydeeweebe] medicate (cf. [diwa] 'medicine').


With a special stem alternant: [j-idibid-] [j-yidibid] arrest.

Causative formations with the affix alternant [y] prefixed to the entire stem (and in turn preceded by a vowel the same as the stem vowel) are recorded a
little more frequently than those with [v] for stems classified as IIb. This
ternant is also recorded in a few other cases specified below:

<table>
<thead>
<tr>
<th>Stem</th>
<th>Causative</th>
<th>Imperative</th>
<th>Meaning of Causative</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIb:</td>
<td>[i-dig]</td>
<td>iysidig</td>
<td>cause to know</td>
</tr>
<tr>
<td></td>
<td>[u-tuk]</td>
<td>uysetuk</td>
<td>cause to hit</td>
</tr>
<tr>
<td></td>
<td>[u-fu'at]</td>
<td>uysufu'at</td>
<td>cause to breathe</td>
</tr>
<tr>
<td></td>
<td>[i-ud-]</td>
<td>uyusud</td>
<td>shorten (cf. [udud] ‘short’)</td>
</tr>
</tbody>
</table>

With two stems of other subclasses

IIa: [u-uku'at] uysuku'at cause to carry
IIa: [o-sobba] oosobba cause to hear

With internal reduplication

IIb: [i-ukum] oysokokom cause to win over

With a stem having the unique structure VC

*I-um* oysom spoil (cf. *uma* ‘bad’)

4.2.4. The Subjective form has an affix which is analyzable as basically [t].
For stems of Class I, the suffix has its basic form [t] after a vowel, the alternant [it] usually after a consonant, but [ut] after a consonant if the preceding vowel is [u]. The corresponding affix for stems of Class II is difficult to determine, but is most likely a doubling of the first consonant in the stem. (For several assimilations of [t] to a following consonant, see 2.1 above.) Several forms are recorded that would answer this description, except that the stem is recorded in other forms in only a few cases. The term Subjective is used for this form because it generally indicates action by the actor outside help, for the actor, upon the actor, or with some other reference to the actor.

The following is a list of the regular Subjective forms recorded for verbs of Class I, with cross-references to other derived forms. This is followed by a list of complex Causative Subjective forms, showing the suffix [sit].

[bak-] bakit eat (?) ; biak- [biakt] get hurt ; daab- [daabt] bend, become bent ; [derig-] derigit (C’’) be dizzy ; [door-] doorit select, choose for oneself ; [daam-] daamit (C’) buy for oneself ; [diil-] it (C’) choke (as on food) ; [bankab-] bankabiti (C’) be frightened ; [bunuso-] [bunussut] ! rem-; [kal-] kalit restrain, refuse ; [kombobbi-] kobobbolit (C’) roll, be rolling ; [labut-] labutit (C’) be sick ; [makile-] makileiti (C’) wander around ; [ega-] egut (C’) get up, depart ; [akal-] [akaliit] (C’) wash (oneself) ; [ayni-] [aynit] (C’) spoil, become spoiled ; [sar-] sariti (C’, C”) clothe oneself ;

\[get dressed; *[su'tu]- [su'ti] (C') hide (oneself); *[waqaqa'a'y]- [waqaqa'a't] (C’) be oppressed.

\[hayan-] [hayatin] (C’) cause (someone) to dress (?) ; *[hoolay-] [hoolayatin] be shy ; *[mar'a'e]- [mar'a'esit] marry (cf. [mar'a] marriage feast); *[may-] [mayatin] fear.

The following are what seem to be Subjective forms recorded for stems of Class II:

<table>
<thead>
<tr>
<th>Stem</th>
<th>Subjective</th>
<th>Imperative</th>
<th>Meaning of Subjective</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIa:</td>
<td>[i-gidil-]</td>
<td>iggidiit</td>
<td>break (spontaneously), be broken</td>
</tr>
<tr>
<td></td>
<td>[i-gire'at]</td>
<td>iggiire'at</td>
<td>be cut off (?)</td>
</tr>
<tr>
<td></td>
<td>[e-teher-]</td>
<td>etteteriit</td>
<td>be clean (cf. Causative)</td>
</tr>
<tr>
<td></td>
<td>[i-dirir-]</td>
<td>iddiririit</td>
<td>eat supper (cf. Causative)</td>
</tr>
<tr>
<td></td>
<td>[i-sil-]</td>
<td>isiliit</td>
<td>pray (cf. [salat] ‘prayer’)</td>
</tr>
<tr>
<td></td>
<td>[e-te'e'as-]</td>
<td>ette'e'esit</td>
<td>regret</td>
</tr>
<tr>
<td></td>
<td>[i-kiti-]</td>
<td>ikitiit</td>
<td>put on (trousers)</td>
</tr>
<tr>
<td></td>
<td>[i-timini-]</td>
<td>ittiminiit</td>
<td>desire</td>
</tr>
</tbody>
</table>

With internal reduplication

*I-usu'ut-| ususu'utit| wonder|

4.2.5. Intensive forms are recorded only for stems of Class II. They are formed by reduplication, sometimes clearly internal but sometimes perhaps better analyzed as final, of a consonant and vowel. Most of these are recorded only in conjunction with other consonantal affixes already discussed. The term Intensive is given to these forms—perhaps prematurely—primarily in the light of the translation of one as ‘shatter’ from a stem meaning ‘break’. In other cases, references more like those of the Subjective seem to be included. The following cases are recorded:

<table>
<thead>
<tr>
<th>Stem</th>
<th>Imperative</th>
<th>Meaning</th>
</tr>
</thead>
</table>

With no other affix

IIa: [i-teher-] iteteteriit loosen oneself
IIa: [e-qerti-] eteqertiit read the Koran to oneself

With Intransitivized

IIa: *e-mene'o-| emene'o'edsit| stretch oneself
IIa: *e-aklik-| emelekka| be mistaken
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adequately illustrated in lists above. The subject pronouns with the Perfect are illustrated at the beginning of 4 above. Used by itself, the Perfect form is usually translatable by an English past tense form, or sometimes by 'be' with an adjective.

The Perfect is also used before a conjunctive morpheme [h]. There may be a special alternant of this morpheme after (?) the plural morpheme [n], and it probably has a zero alternant before certain consonants (cf. 2.5 above); relevant forms are not recorded. There is evidence that this combination is freely used in a variety of constructions, but its most common use is with the Perfect and Imperfect forms of the irregular verb [inni] (see 4.4 below). The difference in meaning associated with the two forms of [inni] is not entirely clear, but it is certainly associated with the completion of the action. The following are a few examples of this usage: [yubilhane] he has seen (it); [yubilhane] he had seen (it) (?); [bemehane] we have eaten (it); [barkabittihane] you have (or she has) been frightened.

The Perfect is also used before a substantivizing morpheme [m], in constructions such as the following: [tabtem mango] those (f.s.) who died were many; many died; [temeeetem uble] I saw you coming.

A negative construction corresponding to the Perfect, but not using the Perfect form, is composed of [ma], the verb stem, and a copula form of the irregular verb [inni] (see 4.4 below). A few examples of this construction are as follows: [mádaaminic] I didn’t buy (it); [mákirínna] he (or she) didn’t get drunk; [mérddinnu] they didn’t run.

Other negative and negative-like constructions use the Perfect form with conjunctive [h], followed by a negative form of [inni] or by the irregular verb [wa] ‘lack (!). These constructions are quite clearly associated with some subtle distinctions in meaning that were impossible to pin down in the limited time available for this analysis.

4.3.3. The Imperfect regularly has the suffix [a] for stems of Class I. For stems of Class II, [a] replaces the initial vowel in every case, the remaining vowels of the stem in a few cases; and there is always a suffix [e]. In stems classified IIb, the long vowel that appears in the Perfect does not appear in the Imperfect. The Imperfect form is commonly translatable by the English present progressive form. Some illustrations of regular Imperfect forms are as follows:

I: [dáam-]: [dáama] I am (or he is) buying it; [ab-]: [abta] you are (or she is) doing it; [alif-]: [alifma] we are opening it; [tul-]: [tulan] you (pl) are drawing (water); [difu-]: [difuu] they are pushing it.

IIa: [uruf-]: [yurufu] he is resting; [urukut-]: [urukutu] it (f.s.) is getting thin; [ifiri-]: [ifirivu] it (f.s.) is bearing fruit; [elbin-]: C: [tasbezinu] you (pl) are making (him) sad.

IIb: [idig-]: [adigivu] I know it; [usul-]: [yasuln] they are laughing; [*uduj-]: C: [ayasududu] he is shortening it.

IIc: [eubh-]: [yabhu] he says so; [ubhu-]: [nabel] we see it.

In the list of Class II verbs given in 4.1.2 above, the Imperfect form is specially
A construction is recorded with [ma] followed by the Jussive and optionally a Perfect form of [inni]. This seems to be another negative of the Perfect, but the evidence is not clear. Such a form is: [ma]dám-o-lé [I didn't (?) buy it].

4.3.5. The Participle also has stress. Otherwise, it is identical with the Perfect for stems of Class I, and also for stems of Class II except that it has the suffix [il] instead of the Imperfect suffix [e]. Subject pronouns are not used with the Participle. Some representative Participle forms are as follows: [da]ma- [da]m-a (buying); [du]- [du]- (pushing); [sa]- [sa] (entering); [se]- [sa] (weeping); [a]r-a- [a]r- (resting); [i]-r- [i]- (eating fruit); [a]-b-[a]- [a]- (chewing); [a]-e-[a]- [a]- (coming).

The Participle is recorded primarily before two conjunctive morphemes, [h] and [k], the latter before affirmative and negative forms of [inni] as well as in other constructions. Some of these are as follows: [a]r-a- [k] (I'm resting); [a]r-a- [k] (I was resting (?)); [a]r-a- [k] (I want); [a]r-a- [k] (I want); [a]r-a- [k] (I don't want); [fi] (I saw someone weeping (?); [fi] (I saw it while I was weeping).

4.4. Irregular verbs.

4.4.1. A common verb meaning 'go', recorded only in the General, is clearly a Class II verb, but is irregular in the combination of its stem with vocalic affixes. The key forms, from which all forms with subject pronouns may be derived, are as follows: Imperfect: [a]da-; Perfect: [a]da-; Jussive: [a]da-; Participle: [a]da-.

4.4.2. A verb meaning 'say', recorded only in the General, is a Class I verb with variant stems [akke]- and [ak-], and with a special Jussive formation. The imperative is [akke]. The Perfect and Jussive forms with subject pronouns are listed below; the Imperfect and Participle probably follow from the Perfect, but are not recorded:

<table>
<thead>
<tr>
<th></th>
<th>Jussive</th>
<th>Jussive</th>
</tr>
</thead>
<tbody>
<tr>
<td>1s</td>
<td>[akke]</td>
<td>[akkówa] or [ə] [ow]a</td>
</tr>
<tr>
<td>2s, 3s</td>
<td>[akke]</td>
<td>[a]kówa</td>
</tr>
<tr>
<td>3ms</td>
<td>[akke]</td>
<td>[akke]- [ə] [ow]a</td>
</tr>
<tr>
<td>1pl</td>
<td>[akke]</td>
<td>[akke]- [ə] [ow]a</td>
</tr>
<tr>
<td>2pl</td>
<td>[akke]</td>
<td>[akkówa] (?)</td>
</tr>
<tr>
<td>8pl</td>
<td>[akke]</td>
<td>[akkówa] (?)</td>
</tr>
</tbody>
</table>

4.4.3. [inni] is an irregular verb of Class II, expressing existence and location ('be, be a'). An Imperfect form [in] is used in negative Imperative constructions (4.3.1 above). The Perfect is [in], and is regular in respect to subject pronouns: [in], [in], [in], [in], [in]. The Imperfect is based on [ane], but is irregular in respect to subject pronouns. In addition, there is another set of forms
which may be called 'copula' forms. The Imperfect and copula forms with subject pronouns are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Imperfect</th>
<th>Copula</th>
</tr>
</thead>
<tbody>
<tr>
<td>1s</td>
<td>[ane] or [anio]</td>
<td>[innio]</td>
</tr>
<tr>
<td>2s</td>
<td>[tane] or [tanito]</td>
<td>[innito]</td>
</tr>
<tr>
<td>3ms</td>
<td>[yan]</td>
<td>[inn]</td>
</tr>
<tr>
<td>3fs</td>
<td>[yan]</td>
<td>[inn]</td>
</tr>
<tr>
<td>1pl</td>
<td>[tanin] or [nanino]</td>
<td>[innino]</td>
</tr>
<tr>
<td>2pl</td>
<td>[tanitin]</td>
<td>[innitin]</td>
</tr>
<tr>
<td>3pl</td>
<td>[yanin]</td>
<td>[innun]</td>
</tr>
</tbody>
</table>

The Jusive is [anáo]. A negative construction corresponding to the Perfect is [máanannio] 'I was not (there)', apparently composed of [ma] + [anna] + [innio]. Other uses of this verb are referred to throughout 4.3 above.

4.4.4. [ki] 'be' (indicating description) and [li] 'have' are more properly defined as copulas than as verbs. They are recorded only in forms similar to the copula forms of [inni] described above, and in the stem. The copula forms are as follows:

<table>
<thead>
<tr>
<th></th>
<th>[ki]</th>
<th>[li]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1s</td>
<td>[kio]</td>
<td>[lio]</td>
</tr>
<tr>
<td>2s</td>
<td>[kito]</td>
<td>[lito]</td>
</tr>
<tr>
<td>3ms, 3fs</td>
<td>[kinn]</td>
<td>[le]</td>
</tr>
<tr>
<td>1pl</td>
<td>[kinn]</td>
<td>[linu]</td>
</tr>
<tr>
<td>2pl</td>
<td>[kinn]</td>
<td>[linin]</td>
</tr>
<tr>
<td>3pl</td>
<td>[kinn]</td>
<td>[linun]</td>
</tr>
</tbody>
</table>

Constructions with these corresponding to the Perfect are made with the stem followed by the conjunctive morpheme [k] and the Perfect forms of [inni]. The stems are recorded with long vowels in this construction: [kí-k-ine] I was; [lí-k-ine] I had.

Besides their uses in verbal constructions as described in 4.3 above, these copulas are commonly used after nouns: [faras kinn] 'it is a horse'; [faras le] 'he has a horse'.

5. A few useful details on additional pronoun forms and on adjectival forms and constructions may be added in conclusion.

5.1. Independent and subject pronouns are discussed at the beginning of 4 above. Besides these, certain other pronoun forms are recorded. These are listed below. The difference in length between the Possessive and Object forms in two cases is suspect.

<table>
<thead>
<tr>
<th>Possessive Object</th>
<th>Indirect Object</th>
<th>Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1s [anu]</td>
<td>[yi]</td>
<td>[yoh]</td>
</tr>
<tr>
<td>2s [atu]</td>
<td>[ku]</td>
<td>[ku]</td>
</tr>
<tr>
<td>3ms [dasuk]</td>
<td>[kass]</td>
<td>[ka]</td>
</tr>
<tr>
<td>3fs [sae]</td>
<td>[tee]</td>
<td>[te]</td>
</tr>
<tr>
<td>1pl [napu]</td>
<td>[ni]</td>
<td>[ni]</td>
</tr>
<tr>
<td>2pl [akín]</td>
<td>[sin]</td>
<td>[sin]</td>
</tr>
<tr>
<td>3pl [dán]</td>
<td>[ten]</td>
<td>[ten]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Possessive, Object, and Indirect object forms precede the governing form. For example: [ku-báda] 'your son'; [ku-nule] 'we saw you'; [kóh-uybu] 'I showed it to you'.

My impression is that a direct object (pronoun or noun) precedes an indirect object, but no relevant sentences are recorded.

5.2. Words translatable by adjectives may be morphologically and syntactically no different from nouns, but are treated separately here to illustrate attributive and predicative constructions. Some examples of these are listed in connection with a morphophonemic alternation in 2.7 above. An attributive precedes a noun; a predicative follows a noun. The following adjectives are recorded with loss of final vowel in attributive position: [da] black; [deéa] long; [fína] wide; [la] hot; [šus] new; [udjua] short.

The following adjectives are recorded in their full form in attributive position: [ka] dry; [me] good; [nabu] big; [sado] white; [fenda] small; [uma] bad.

The following adjectives have not been tested in attributive position: [dum-duma] blunt; [liliga] sharp; [manga] rough.

Some adjectives are followed by [kin] (from [ki]) in attributive position. The following illustrate two of these; the forms are full in both cases: [da]kina-kin atak an old rope; [ra]kina-kin sarena cheap clothes.

This is very likely the construction used with a noun attribute. A verb may also be used attributively: [keme-saga] 'the cow that came'.

An attributive that is almost surely a noun has two forms, the second corresponding to a unit form of a class noun: [san, stytis] 'female'.

5.3. A few morphemes illustrating place relations are illustrated in the following: [ko] ['reko yemeete] he came from the house; [ro] ['reko yane] he is in the house; [al] [aratal tane] it is on the bed; [fana] [fane fan(ah) yade] he went to the house; [rigiddi] [arat rigiddi tane] it is under the bed.