

# STEM VARIATION IN MODERN SINHALA VERB MORPHOLOGY

Pannakitti Parawahera

Department of Linguistics  
University of Victoria

## 1. INTRODUCTION

Like many other modern Indo-European languages, modern Sinhala shows the loss of its inflections that were inherited from the ancestral languages. For example, the VP in modern Sinhala does not agree with its subject NP for person and number as it did in old Sinhala. However, each verb in modern Sinhala shows a large number of stem variations which are the residue of earlier inflectional processes. The most significant instance of stem variation is found in a verb's division into four categories which are named- Active (A), Processive (P), Active Causative (AC) and Processive Causative (PC)[1] in this paper. This paper argues within the framework of Lieber (1981), that the stem variation in modern Sinhala verbal system is a lexical process.

## 2. PRELIMINARIES

The verb root /bala/ "to see" in modern Sinhala has the following Present, Past and Future inflectional paradigms for each of the four categories.

### 2.1

|    | <u>Present</u> | <u>Past</u> | <u>Future</u> |
|----|----------------|-------------|---------------|
| A  | baləṇə         | bəluwə      | balaawi       |
| P  | bələṇə         | bəluṇə      | bəleewi       |
| AC | baləwəṇə       | bəlewuwə    | baləwaawi     |
| PC | bələwəṇə       | bələwunə    | bələweewi     |

There are also the following nominal derivations which are again related to the same verb root /bala/.

### 2.2

| <u>Active</u> | <u>Processive</u> | <u>Act. Causative</u> | <u>Proc. Causative</u> |
|---------------|-------------------|-----------------------|------------------------|
| bəliim        | bəlum             | bələwiim              | bələwum                |

### 2.3

Nominals thus derived take part in compounds as follows:

|     |           |   |           |   |                 |          |
|-----|-----------|---|-----------|---|-----------------|----------|
| (1) | bəl-um    | + | gal       | > | bəlungal        | /bala/   |
|     | seeing    |   | rock      |   | watch tower     |          |
| (2) | kiyəw-iim | + | saala     | > | kiyəwiimsaala   | /kiyawa/ |
|     | reading   |   | hall      |   | reading hall    |          |
| (3) | wəw-ili   | + | karmaanta | > | wəwilikarmaanta | /wawa/   |

plantation                  industry                  plantation industry

### 3. THEORETICAL BACKGROUND

According to Lieber's (1981) framework, the lexicon consists of three subcomponents:

1. Permanent Lexicon which contains lexical entries, morpholexical rules and redundancy relations
2. Lexical Structure subcomponent consisting of binary branching unlabelled trees and general node labelling conventions.
3. String Dependent rule component with productive morphological rules sensitive to the segmental nature of the string on which they operate. (Lieber, 1981:33)

The next important mechanism within this framework is the application of the general node labelling conventions. This takes place in the Lexical Structure subcomponent according to the following Feature Percolation Conventions:

1. Convention I: All features of a stem morpheme including category features percolate to the first non-branching node dominating that morpheme.
2. Convention II: All features of an affix morpheme including category features percolate to the first branching node dominating that morpheme.
3. Convention III: If a branching node fails to obtain features by Convention II, features from the next lowest labelled node are automatically percolated up to the unlabelled branching node. (Lieber, 1981:49-50)

### 4. ANALYSIS

In analyzing the stem variations in the modern Sinhala verbal system, this paper assumes that a verb form has three parts **Root + Affix<sub>1</sub> + Affix<sub>2</sub>**. For example, the present tense form of the Active verb consists of the three parts- bala + a + na in its underlying form. (Note that /a/ and /ə/ in open syllables except the initial are reduced to ə in the surface forms). It is argued that Affix<sub>1</sub> conditions the four way division of a verb root. In other words, a verb root undergoes a Stem Building process which results in four stem shapes for each verb in modern Sinhala. For example, the verb root /bala/ has the following four stem shapes in the surface form.

#### 4.1

|     |        |
|-----|--------|
| A=  | balə   |
| P=  | bəle   |
| AC= | baləwə |
| PC= | bələwe |

The difference among these four stem shapes can be captured by two binary value features [+/-Agent] and [+/-Volitive] in the following combinations: [+agent],[+volit]; [+agent],[-volit]; [-agent],[+volit]; and [-agent],[-volit]. The feature [+/-agent] indicates whether the action originated from the doer or not and the feature [+/-volit] indicates whether the action thus performed does or does not involve the doer's volition. It is assumed that these feature specifications are listed along with the Stem Building Affixes as a part of their diacritic features and in the stem building process, depending on what affix is attached, the stem shape would be named as in 4.2.

#### 4.2

|                |                   |
|----------------|-------------------|
| Active         | [+Agent],[+Volit] |
| Processive     | [+Agent],[-Volit] |
| Act.Causative  | [-Agent],[+Volit] |
| Proc.Causative | [-Agent],[-Volit] |

Affix<sub>1</sub> is thus involved in the Stem Building Process and Affix<sub>2</sub> in either an Aspect Building or a Noun Formation Process. Aspect Building Affixes are those that form the three tenses of a verb and Noun Forming Affixes are obviously those that take part in the noun formation process from the verbal stems. Stem Building Affixes are marked V<sup>1</sup>, Aspect Building Affixes V<sup>2</sup> and the Noun Forming Affixes N. V<sup>1</sup> affixes always precede the V<sup>2</sup> or N affixes. It is, therefore, necessary to introduce subcategorization restrictions so that V<sup>1</sup> affixes will always be added to the verb Root and V<sup>2</sup> or N affixes will follow V<sup>1</sup> affixes. In addition, V<sup>2</sup> affixes will have one of the three diacritic features- [+Present], [+Past] or [+Future]. N affixes will, however, have no such diacritic features. In 4.3 is a summary of the analysis discussed so far.

#### 4.3

##### (a) Stem Building Affixes

| <u>Affix</u> | <u>Diacritic Features</u> | <u>Category</u> | <u>Subcategorization</u> |
|--------------|---------------------------|-----------------|--------------------------|
| -a           | [+Agent],[+Volit]         | V               | ]V <sup>1</sup> ---      |
| -e           | [+Agent],[-Volit]         | V               |                          |
| -wa          | [-Agent],[+Volit]         | V               |                          |
| -we          | [-Agent],[-Volit]         | V               |                          |

##### (b) Aspect Building Affixes

| <u>Affix</u> | <u>Diacritic Features</u> | <u>Category</u> | <u>Subcategorization</u>           |
|--------------|---------------------------|-----------------|------------------------------------|
| -na          | [+Pres]                   | V               | ]V <sup>1</sup> ---]V <sup>2</sup> |
| -uwa         | [+Past]                   | V               |                                    |
| una          | [+Past]                   | V               |                                    |
| -wi          | [+Futr]                   | V               |                                    |

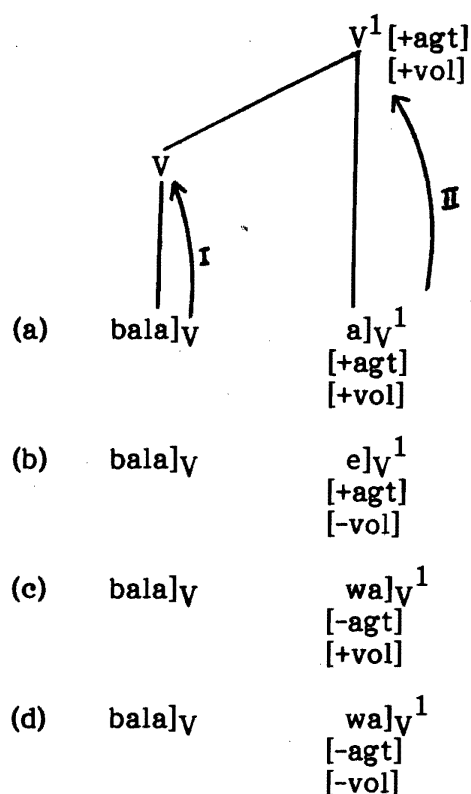
##### (c) Noun Forming Affixes

| <u>Affix</u> | <u>Diacritic Features</u> | <u>Category</u> | <u>Subcategorization</u> |
|--------------|---------------------------|-----------------|--------------------------|
| -iim         |                           | N               | ]V <sup>1</sup> ---]N    |
| -um          |                           | N               |                          |
| -ili         |                           | N               |                          |

## 5. DISCUSSION

Verb roots and the affixes will be listed in the permanent lexicon as terminal elements together with their diacritic and category features and subcategorization restrictions. Based on this information available, the process of affixation will take place in the second subcomponent of the lexicon. In this process, the terminal elements are inserted into binary branching trees and the feature percolation conventions mentioned in 3.2 percolate the features into the higher nodes. The illustration 5.1 shows how the stem building process takes place for the verb root /bala/.

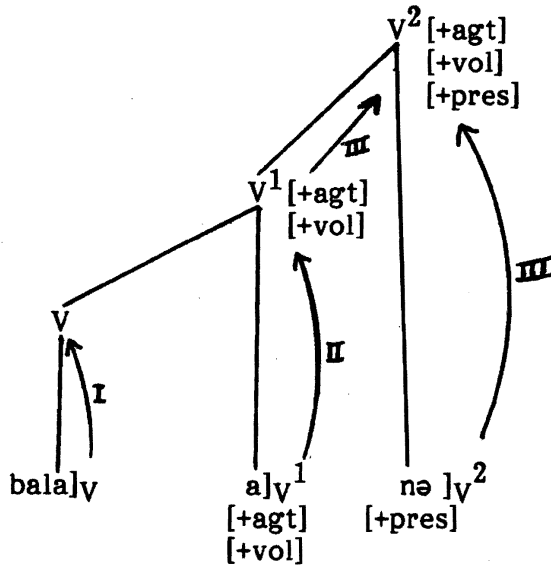
## 5.1



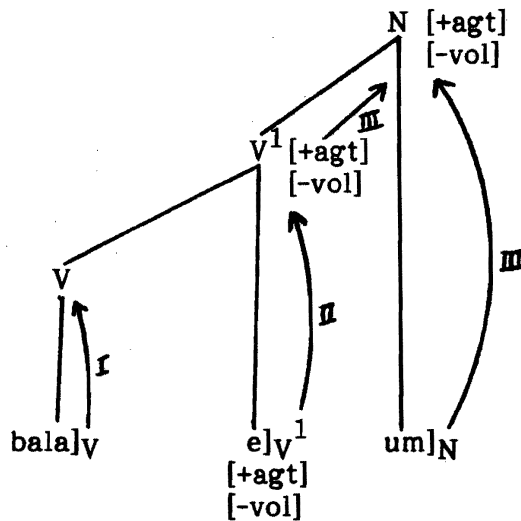
The arrows I and II refer to the feature percolation principles I and II respectively. Arrow I shows that the category feature is percolated up to the first non-branching node by convention I. Arrow II indicates that the category feature and the diacritic features are percolated up to the first branching node that dominates the morpheme. In accordance with the subcategorization restrictions, aspect building or noun forming affixes are inserted into a binary branching tree of  $V^1$  node. With the operation of the feature percolation conventions category features including diacritic features are percolated up the higher node as illustrated in 5.2.

## 5.2

(a)



(b)



In 5.2 first the convention I percolates the relevant information to the first non-branching node as shown by arrow I and arrow II indicates the percolation of the features up to the first branching node of each morpheme that dominates the morpheme by the operation of convention II. In the event that a branching node fails to receive features by convention II, features from the next lowest labelled node are automatically percolated up to the unlabelled branching node. This is illustrated in 5.2 by arrow III showing that the features [+/-agt] and [+/-vol] are percolated up the higher node.

In order to arrive at the correct surface forms, the derived forms have to undergo further changes with regard to the vocalic segments. Deletion of vocalic segments and

some modifications in quality and quantity of the existing vowels are necessary. Some of such changes are phonological and some, have to be treated as morphological. This paper argues that the vowel fronting should be a morphological rule.

In the verb paradigm mentioned in 2.1, there are two types of vowel changes. In the future tense forms, it is the quantity of the final vowel that has changed. Stem final vowel is lengthened before the future suffix -wi. In the absence of phonological evidence for vowel lengthening in the future tense verb forms, it is assumed that this is morphologically conditioned and the feature [+long] is added to the morpheme -wi to indicate this. Changes in the vowel quality are found for all Past tense forms and for the P and PC verb forms in the Present tense. Except for the P and PC present tense forms, there are no clues to point out that this vowel fronting was triggered by a phonological factor. With regard to the vowel fronting in the present tense P and PC verb forms, it could be argued that the vowel fronting was triggered by the front vowel e in the stem building suffixes -e and -we. This same argument can be brought for vowel fronting in nominal forms whose suffixes are either -iim or -ili as both suffixes have high front vowels that could have triggered the vowel fronting in the stem vowels. However there is no such phonological evidence to argue for vowel fronting before the nominal suffix -um. It thus turns out to be the case that vowel fronting can be accounted for phonologically only in certain environments. This leads one to believe that the vowel fronting in the past tense forms, and also before -um suffix in the nominals is due to a morphological rule in modern Sinhala. Consequently, one has to consider whether there are two vowel fronting rules in modern Sinhala - one which is phonological and the other morphological. This paper argues that all cases of vowel fronting in the verbal system in modern Sinhala is morphological even though there are instances such as those mentioned above where there are still some phonologically accountable environments which are believed to be true in diachronic phonology. In order to capture the morphological rule of vowel fronting, the feature [+umlaut] is introduced in the relevant morphemes. The two features [+long] and [+umlaut] will then cause the relevant vowel changes to take place in the third string dependent morphological rule subcomponent. The two morphological rules that will account for this are in 5.3 and 5.4

### 5.3 Umlauting Rule

[+syl] --> [-bk] /---[+um]

### 5.4 Vowel Lengthening Rule

[+syl] --> [+long] /---[+long]

The following are two examples illustrating the operation of the two rules above in the String Dependent rule subcomponent of the grammar.

This paper has proposed that the stem variation in the modern Sinhala verbal system is a lexical process. Within the lexicon this argument was supported by nominals that are derived from the stems and further by having such nominals undergoing compounding. In analysis, it was pointed out that there are two sets of affixes that are added to a verb root. The first set which was named as Stem Building Affixes, is the cause of the stem variations. The second set of affixes which always follows the first is the input to either Nominals or Aspective Verbs. Both of these affixation processes were treated as derivational. The three subcomponents explained in Lieber's framework provided the essential mechanism to handle the proposed analysis. Roots and affixes are stored as terminal elements in the permanent lexicon with their relevant information such as category features. The second subcomponent handles all the derivations while filtering the proper information to the final output by means of the feature percolation conventions. The third subcomponent provides the scope for the morphological rule applications. Finally, in arriving at the correct surface forms, the derived lexical items have to undergo some phonological changes such as vowel reduction, vowel deletion etc.. For this purpose, either some modifications to the existing third subcomponent should be made or a separate level should be added for the phonological rule applications.

## NOTES

- [1] This terminology for the modern Sinhala verbs was adopted with some modifications from Gunasinghe (1976).

## REFERENCES

- Anderson, Stephen R. (1982). Where's Morphology? Linguistic Inquiry, 13, 571-611.
- \_\_\_\_\_. (1987). Inflectional Morphology. Stanford University: Linguistic Institute (1987).
- Aronoff, Mark. (1976). Word Formation in Generative Grammar. Linguistic Inquiry Monograph 1. Cambridge, MA: MIT Press.
- Clements, G.N. and S.J. Keyser. (1983). CV Phonology: A generative Theory of the Syllable. Cambridge, MA: MIT Press.
- De Silva, M.W.S. (1973). Wigrahathmaka Wagwidyawa. Colombo: Educational Publications Department.
- Dissanayake, J.B. (1969). Bhashawaka Rata Samudaya. Colombo: Lake House Investments & Co. Ltd.
- Geiger, Wilhelm. (1983). A Grammar of the Sinhala Language. Colombo: The Royal Asiatic Society.
- Gnanaloka, K. (Ed.). (1971). Sidat Sangara Purana Sannaya. Weligama: Hemachandra V. Gunasekara.
- Gunasekara, Mendis A. (1962). A Grammar of the Sinhalese Language. Colombo: Sri Lanka Sahitya Mandalaya (Academy of Letters).
- Gunasinghe, Hemamali. (1978). Do and Happen: The Ergative in Colloquial Sinhala. M.A. Thesis. Victoria, B.C.: Department of Linguistics, University of Victoria, Canada.
- \_\_\_\_\_. (1983). Gemination as a Syllable Structure Process in Modern Sinhala. Working Papers of the Linguistics Circle, 3, 87-103. Victoria, B.C.: Department of Linguistics, University of Victoria.
- \_\_\_\_\_. and Joseph F. Kess. (1985). Preliminaries to the Re-analysis of the Sinhala Passive, in Suriya Ratnakul et al (Eds.), Southeast Asian Linguistic Studies presented to Andre-G. Haudricourt. Bangkok: Mahidal University.
- Jackendoff, R. (1975). Morphological and Semantic Regularities in the Lexicon. Language, 51, 639-71.
- Kaisse, Ellen M. and Patricia A. Shaw. (1985). On the theory of Lexical Phonology, Phonology Yearbook.



- Kean, Mary-Louise. (1974). The Strict Cycle in Phonology. Linguistic Inquiry, 5, 179-203.
- Kiparsky, Paul. (1982a). From Cyclic Phonology to Lexical Phonology: In The Structure of Phonological Representations, Vol. 1. (pp. 131-75). Dordrecht: Foris.
- \_\_\_\_\_. (1982b). Lexical Morphology and Phonology: In Linguistics in Morning Calm, (pp. 3-91). Seoul: Hanshin.
- \_\_\_\_\_. (1982c). Explanation in Phonology. Dordrecht: Foris.
- Kumaratunga, M. and A. Gunawardana, (Eds). (1962). Sidat Sangara Wiwaranaya. Colombo: K.A. Ariyadasa & Co.
- Lieber, R. (1981). On The Organization of The Lexicon. Bloomington: Indiana University Linguistic Club.
- \_\_\_\_\_. (1983). Argument Linking and Compounds in English. Linguistic Inquiry, 14, 251-85.
- \_\_\_\_\_. (1987). An Integrated Theory of Autosegmental Processes. Albany: State University of New York Press.
- Mohanan, K.P. (1982). The Theory of Lexical Phonology. Dordrecht: Reidel.
- Pullum, Geoffrey K. and Arnold M. Zwicky. (1986). Phonological Resolution of Syntactic Feature Conflict. Language, 62, 751-73.
- Rosenthal, S. (1988). Syllabification and Representation in Sinhalese Phonology. McGill Working Papers in Linguistics, 5, 130-17.
- Siegel, Dorothy. (1974). Topics in English Morphology. New York: Garland.

