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A Closer Look at Sundanese Phonology

Geoffrey Gathercole

Introduction

1.1. In a series of papers published in the 1950's, Robins(1953a, 1953b, 1957, 1959) has presented an analysis of various aspects of Sundanese phonology, morphology, and syntax, within the framework of British linguistics and particularly the principles of prosodic analysis as developed by Firth. The purpose of this paper is to review his treatment of some phonological processes in Sundanese, compare Anderson's (1972) restatement of the processes in a generative framework, and give evidence for a possible reformulation of the rules, including additional rules for some other processes in the language.

1.2. Most of the data presented here are drawn from Robins, but all were elicited for confirmation from Fudiat Surjadikara, a native speaker of Sundanese. Some of the data from Robins do not fit with my observations, and these will be discussed below.

1.3. The phonemes of Sundanese are these:

Non-syllabics:

p	t	č	k	
b	d	j	g	
	s			h
w	r/l	y		
m	n	ñ	ŋ	

IJAL 3: 46-75.

West, John David. 1974a. Mikasuki verb prefixes. Paper presented at SECOL XI.

_____. 1974b. Number in the Mikasuki verb stem. Summer Institute of Linguistics, University of North Dakota. Work Papers 18: 133-38.

_____. 1975. Mikasuki verb suffixes. Unpublished manuscript.

Syllabics:

i	ɪ	u
e	ə	o
	a	

Nasalization

2.1. In Robins 1957, following the Firthian tradition of prosodic analysis, vowel nasalization is characterized as a feature occurring on the word level (i.e. a suprasegmental feature) which, starting at a nasal consonant, propagates from left to right along a word until it reaches a supraglottally articulated consonant.

Among the data exemplifying this phenomenon are the following:

měre	'give'
ññār	'seek'
mīʔāsih	'love'
bəŋhār	'be rich'

However, as Anderson (1972) points out, this can be satisfactorily described as a common process of assimilation which prepropagates for as long as the velic is not closed for the articulation of an oral consonant. Thus the notion of the nasal prosody is not necessary for this case.

Robins, however, has argued that this nasalization needs to be seen as a prosodic feature (i.e. non-process phenomenon) because of the following.

There is an infix -ar- (-al-)¹, marking a verb as having a plural subject or object, which when it occurs in nasalized forms produces forms like the following:

mõčkɪn	'dry'	mãročkɪn	pl. 'dry'
nĩʔĩs	'cool'	nãriʔĩs	pl. 'cool'

i.e. the vowel of the infix is nasalized and nasalization crosses over the oral consonant /r/ but does not affect the immediately following vowel. Note that /r/ usually blocks propagation of nasalization. This phenomenon is described by Robins as a condition on the application of the prosody, and Anderson again argues that the description is accurate but fails to characterize the nature of the process at work here. The point could be made that the prosodic analysis completely fails to capture the simplicity of the phonetic process. For example,

sunda	'Sundanese'
goreŋ	'be bad'
pondok	'short'

have no nasalization, even though they contain nasal consonants, because the articulatory sequence prevents it.

Anderson, having appealed to the logic of articulatory sequence, then proceeds to create rules to describe the data in a generative framework. However we formalize them, the required rules would need to describe (1) nasalization of the root form, (2) infixation, (3) nasalization of the infix, and (4) denasalization of a vowel following non-nasal consonant. Anderson reviews Langendoen's (1968) proposal that one rule can describe the process, viz.,²

[+Vocalic] → [+Nasal] / [+Nasal] ([+Plural] +[]) [-Cons]₀_____

He points out that since this rule is intended to nasalize the vowel of the infix as well as the vowels which follow, but skipping the

vowel immediately following the plural marker, we would have to interpret the parts of this rule as being conjunctively ordered since both parts are required to apply in a single derivation³.

Anderson shows that by appealing to the notion of "local ordering", whereby rules order themselves at any stage in a derivation in such a way that they feed and counterbleed each other, these rules can be reduced to three simple rules. The nasalization rule would apply before the infixing rule, because otherwise the latter would remove the environments which allow the former to apply. Similarly, the infixing rule would then apply, thus creating new environments for the nasalization rule and the denasalization rule.

2.2. This formulation by Anderson describes the data from Robins 1957 and has important theoretical implications, since he uses this as strong evidence for his local ordering hypothesis. However, my own investigation suggests that for at least some speakers, the nasalization process works differently. The following are among the data obtained for verbs and do not represent exceptional cases.

nāhō	'know'	nārāhō	pl. 'know'
nī'īs	'cool o'self'	nārī'īs	pl. 'cool o'self'
mītiŋ	'spend night'	mārītiŋ	pl. 'spend night'
mōēkɪn	'dry'	mārōēkɪn	pl. 'dry'
nāūr	'say'	nālāūr	pl. 'say'

According to these data, it seems to me that there are three alternatives.

2.3. (i) Since Anderson's rules dealt basically with the inter-

action of infixing and nasalization, we can simply remove the denasalization rule, which is not otherwise needed in the phonology and retain the local-ordering concept⁴. (ii) We could accept a prosodic treatment which would look more attractive when it required a less questionable condition statement⁵. (iii) We can return to a revision of the rules proposed by Howard (1971) and modified by Anderson requiring a morphological environment, viz.,

$$[+Syllabic] \rightarrow [+Nasal] / [+Nasal] ([+Plural]) \left(\begin{array}{l} [-Cons.] \\ [-Syll.] \\ [-High] \end{array} \right) \text{_____}$$

thus avoiding the problem by inserting the infix in the input to the P-rule component. But, as mentioned above, this kind of rule has otherwise been interpreted as disjunctive, whereas it would have to apply conjunctively in order to yield the desired output.

A fourth possibility is to posit underlying nasal vowels. This has consistently been rejected because, apart from the particular case under discussion where the plural marker appears, all instances of nasal vowels are predictable by the simple iterative rule:

$$[+Syllabic] \rightarrow [+Nasal] / [+Nasal] \left(\begin{array}{l} [-Consonantal] \\ [-Syllabic] \\ [-High] \end{array} \right) \text{_____}$$

Moreover, a rule of nasalization is required independently to nasalize the vowel of the infix. Though nasalization of vowels is predictable by the correct set of rules, there does seem to be a sense in which the nasalization of the root is a feature which 'belongs' to it. Whether the proper formalism is that suggested by Anderson, or a set of extrinsically ordered rules,

1. Nasalization of root
2. Infixing

3. Nasalization of affix

it would seem desirable to capture the fact that the reason nasalization is allowed to propagate past the /r/ of the plural marker (which we would expect to block propagation) is precisely that it is already present in the form that the infixing rule applies to.

The use of a rule including (+Plural) in the environment fails to explain why nasalized vowels should appear beyond the oral consonant, in addition to creating a theoretical problem of the proper application of rules containing parentheses.

Other Processes

3.1. Anderson has analysed the process of infixation as a special case of prefixation, such that all the prefixes of the form VC (ar-, al-, um-, in-) appear as prefixes in words beginning with a vowel and infixes in words beginning with a consonant, e.g.,

ala	'take'	ar-ala	pl. 'take'
dahar	'eat'	d-al-ahar	pl. 'eat'

He suggests plausibly that this process serves to create or conserve the preferred syllable structure.

In fact, several rules conspire to conserve or create the CVCVC structure in Sundanese. (a) the above-mentioned infixing rule, (b) Anderson's epenthesis rule,

$$\emptyset \rightarrow a / + [-\text{Syllabic}] ______ \# [-\text{Syllabic}],$$

which inserts /a/ when the prefix /ŋ-/ is attached to a root beginning

with a non-vowel; (c) glottal stop insertion; and (d) suffix reduction.

3.2. Anderson's formulation of (a) infixing and (b) epenthesis seem to be correct. Robins (1953b) discusses (c) glottal stop insertion and claims that all instances of glottal stop can be predicted by rule. Rule (c(i)) inserts a glottal stop between a prefix ending in a nasal consonant or a vowel and a root beginning with a vowel.

$$(c(i)) \quad + \rightarrow ? / \left\{ \begin{array}{l} [-\text{Syll}] \\ [+Nas] \\ [+Syll] \end{array} \right\} \text{ ______ } \neq [+Syllabic]$$

e.g.

asup	'enter'	kaʔasup	'belong'
idin	'permission'	paʔidin	'permission'
entep	'put in order'	paʔentep	'lie on top'
indit	'leave'	paʔĩndit	'reason for leaving'
omõŋ	'say'	mĩʔomõŋ	'talk about'

Rule(c(ii)) inserts a glottal stop between two identical vowels whenever these would come together (i.e. morpheme internally or at a boundary).

$$(c(ii)) \quad \emptyset \rightarrow ? / \left[\begin{array}{l} +\text{Syll} \\ \alpha\text{High} \\ \beta\text{Low} \\ \gamma\text{Back} \\ \delta\text{Round} \end{array} \right] \text{ ______ } \left[\begin{array}{l} +\text{Syll} \\ \alpha\text{High} \\ \beta\text{Low} \\ \gamma\text{Back} \\ \delta\text{Round} \end{array} \right]$$

e.g.	tiʔis	'cold'		
	čoʔo	'look after'		
	dua	'two'	duaʔan	'the two'
	taña	'ask'	nañaʔan	'propose to'
	penta	'ask'	mentaʔan	'ask questions'

Note that this process does not represent a constraint on all vowel clustering, as the following data show:

dua	'two'		
poe	'eye'		
tilu	'three'	tiluan	'the three'
teñjo	'see'	neñjoan	'look at'

The first of these rules does not operate across all morpheme boundaries, but only at the beginning of a root. Further investigation could prove that the environment is _____ [+Stress], thus providing a phonetic environment for this rule. If it should turn out that the glottal stop is present in some underlying forms, it would require that Anderson's epenthesis rule be rewritten so as to overlook the glottal stop but not /h/.

3.3. The fourth process (d) works on suffix -an as follows. Suffix reduction can occur with some words yielding a contracted form. It takes the form

$$\begin{array}{ccc}
 \left[\begin{array}{l} +\text{Syllabic} \\ +\text{High} \end{array} \right] & + & \left[\begin{array}{l} +\text{Syllabic} \\ +\text{Low} \end{array} \right] & \Rightarrow & \left[\begin{array}{l} +\text{Syllabic} \\ -\text{High} \\ -\text{Low} \end{array} \right] & \phi \\
 1 & & 2 & & 1 & \text{---} & 2
 \end{array}$$

e.g.

impi	'dream'	impi+an	= impen	'dream'
tiru	'copy'	tiru+an	= tiron	'copy'
layu	'wilt'	layu+an	= layon	'corpse'
sumbu	'wick'	pasumbu+an	= pasumbon	'touch hole (of musket)'
pasti	'be settled'	papasti+an	= papasten	'fate'

but, cf. tilu 'three' tilu+an = tiluan 'the three'

It is not clear if this is a minor rule (it is not an optional rule), since not all forms that fit the structural description undergo the

rule.

Conclusion

A complete working description of Sundanese is barely begun. An inspection of the table of derivational processes in Sundanese presented in Robins 1959 reveals the complexity of the morphology while hiding to a large extent the processes of the phonology. This has been a small attempt to review some and reveal others with the help of first-hand evidence.

Footnotes

1. The distribution of ar / al is described in Robins (1957). "-al- is used with forms whose initial consonant is l, and with those containing a following r, except as initial consonant of the second syllable. Words of any other structure regularly infix -ar-".
2. Among the problems with this rule that A. doesn't mention are: i) The specification of [-Consonantal], while intended to refer to /h/ and /ʔ/ actually includes all the vowels and would thus yield the wrong results, and ii) Roert L. Rankin has pointed out to me that this rule violates the "Adjacency condition" which specifies that no 'vulnerable' segment may appear between two segments subject to this kind of assimilatory P-rule.
3. As Howard pointed out (Howard 1971 - cited by Anderson), this violates the proper application of collapsed rule schemata, the parts of which, according to Chomsky and Halle (1968), should be in a disjunctive relation. Kenneth Miner questions whether any serious attempt has ever been made to clarify the ordering of the expansions of these iterative schemata.
4. Kenneth Miner has noticed that a further problem with this analysis is that the infixing rule is a P-rule ordered in the phonological component, whereas infixation has previously been regarded as belonging to the input of the P-rules. This question is not addressed by Anderson.
5. Robert L. Rankin points out that this solution is reminiscent of

- Lightner's (1965) morpheme features which incorporates harmony features into a generative account of the phonology of Mongolian.

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