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AN AUTOSEGMENTAL APPROACH TO NASALIZATION, DELETION AND SPIRANTIZATION IN ÉKÉT

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Abstract

This work focuses on the phonological processes of Ékét from the viewpoint of Autosegmental Phonology (ASP). Specifically, we examine nasalization, deletion and spirantization within the context of ASP. For instance, rather than using the reiterative linear rule of nasalization, nasalization in Ékét can be better handled by using ASP as a methodological tool. It is also observed that frication is abstractable. This is accounted for by docking rule. The paper concludes by stating that much as the earlier theories of phonology are desirable, ASP has shown that effective analysis of Ékét phonology can be achieved through the use of ASP as a theoretical framework.

Introduction

Ékét is a dialect of Ibibio, which belongs to the Lower-Cross subgroup of the Delta Cross group of languages. However, in recent years, some dialects of Ibibio including Ékét are claiming autonomy (Essien, 2003). 1991 census figure put Ékét speakers at about 78 thousand people.

In this work, we shall explore the value of the Autosegmental framework (ASP) on the phonological processes embodied in Ékét. Particularly, we examine how well the data on Ékét can be effectively analyzed using ASP as a theoretical model. Thus, processes such as nasalization, deletion and spirantization are considered.

The work is divided into three broad sections. In section one, we present the theoretical background of the study highlighting some of the principles, application and effectiveness of ASP. We also establish reasons for our choice of this framework. Section two is the core of our study. Here we examine and analyze some phonological processes of Ékét using ASP. We use segmental analysis where necessary to justify our position. Section three summarizes the thrust of the research.

1.0 Theoretical Framework

The theoretical model assumed for this work is Autosegmental theory as expounded in Goldsmith (1976), McCarthy and Prince (1986) and further explicated in Kenstowicz (1994) and Roca (1994).

All the earlier theories, especially segmental theory, claim that phonological representation is uni-tiered, that is, phonological representation exists at a single level. The segment and the suprasegment are seen as composed of bundles of features. In view of this, a significant task for a theory of phonology is to delineate such classes, the characterization of which derives in primitive terms from a small set of subsegmental distinctive features (Jacobson, et. al. 1952, Chomsky and Halle, 1968). ASP develops an approach to phonological representation which assigns a separate tier to the suprasegment. For example, place assimilatory features (which is obtained by change of features), will be assigned to a separate autosegmental tier of representation (Pulleyblank, 1995:6-7). Pulleyblank (1983:28) confirms the multi-tiered nature of phonological representation when he says "... the most important and uncontroversial aspect of ASP is that the phonological representation is broken into a finite number of parallel tiers ...". And at least two independent tiers will be present. For example, the word "àbàsi" 'God' in Ékét will have the representation in (I) below:

(1)

Tonal	T		T		T	
Skeletal tier		V	C	V	C	V
Phonemic melody		a	b	a	s	i
Tier						

The illustration above is a simple representation of what the phonological representation looks like. The low tone of the morpheme will be represented on the tonal tier while the phonemes will be represented on the phonemic melody tier. The constituents on any of the tiers are called autosegments and are said to be autonomous.

The representation above shows that individual features are organised under hierarchically superordinate nodes. The class nodes themselves are dominated by root node. The root node in turn is directly linked to the CV-tier. Each class node acts as super node for some features. Each class tier is independent such that the rules that operate on one tier do not necessarily have influence on the autosegments of another tier. For instance, a rule of vowel disyllabification (at the phonemic melody tier) is not applicable on the tonal tier. Tones are specifically represented on the

tonal tier while segments are represented on the melody tier. One level is therefore seen as parallel to the other. Hence, the term 'autosegmental'.

However, there is a synchrony between the levels for articulatory reasons. This means that in the course of pronunciation, the autosegments of one level are not uttered separately from the autosegments of another level. This validates the observation that the various levels identified are autonomous but related.

"Association lines" which join one autosegment to another indicate the evidence of co-articulation of the levels. Such lines are neither automatically nor arbitrarily drawn. They are guided by universal and language specific principles.

Tiered phonology (a more general term applied to frameworks that separate tiers) is a framework whose major focus centres on the formal characterization of the phonological representation. This theory, even though differs greatly from the standard theory, is not an alternative to it.

ASP is designed to handle tone, and later developed to cater for other suprasegmental features of speech like stress and intonation which create problems for the linear phonology. By extension, its empirical domain in the analysis of certain non-tonal phenomena like vowel harmony, nasality, denasalization to mention but a few, shows its problem-solving effectiveness. The fact that this model transcends tonal phenomenon is reflected in Goldsmith's (1979:208) submission that the theory "... in general, however ... is not meant to deal only with tone ...".

It is on this basis that we shall apply this theory to some phonological processes attested in Ékét namely nasalization, deletion and spirantization.

2. Nasalization in Ékét

2.1 Segmental Analysis of Nasalization

Nasalization works progressively in this lect. This is so since neither word-initial nasalized vowels nor underlying nasal vowels occur. On this premise, we expect a clear instance of nasalization when oral vowels are preceded by nasal consonants. The true nature of progressive nasal assimilation is exemplified in (2) below:

(2)	(a)	/mëm # ijah/	[mëm?jáh]	'catch fish'
		catch fish		
	(b)	/inini # afën/	[íniniãfën/	'dirty cloth'
		dirty cloth		

	(c)	/mi# abåd/	[miabåd]	'with (a) ladder'
		with ladder		
	(d)	/usë # aniniåwå/	[usë aniniå]	'old man'
		old man		
	(e)	/mëm # inò/	[mëm ?nò]	'catch (a) thief'
		catch thief		

The process in the data above is captured in the phonological rule (PR) below:

PR 1

$$\begin{bmatrix} +\text{syll} \\ \\ \text{nas} \end{bmatrix} \longrightarrow [+\text{nas}] \; / \; \begin{bmatrix} +\text{cons} \\ \\ +\text{nas} \end{bmatrix} \; \_\_$$

The rule states that a vowel is nasalized when it is preceded by a nasal consonant. In the next section, we consider the autosegmental option for the analysis of nasalization.

2.1 Autosegmental Analysis of Nasalization

A segmental account of nasality reveals that nasality operates on domains larger than the segments hence, an autosegmental analysis. This further buttresses the autonomous level on which nasality is placed. In essence, nasality is conceived as an abstractable feature that is capable of operating on another tier. Bamisaye (1987:120) likens nasality to a unified process of spread of feature over a given scope or domain. The behaviour of nasality as an autosegment is very close to other prosodic features like tone, stress, etc. that form core motivations for ASP.

Autosegmentalization of nasality is productive as it has been used to analyse some languages among which are: Igbo (Ihionu 1984), Guarani (Goldsmith 1976), Aladagbe (Soremekun 1986), Ogberia (Chumbow 1986), Gokana (Hyman 1982) and Bekwarra (Bamisaye 1987). In the section that follows we present an autosegmental analysis of nasality in Ékét. Meanwhile, below are the specifications for the Autosegmental framework with respect to nasality.

The Phonetic Segment

The autosegmentalised phonetic feature identified for nasality is [N]. The presence or absence of this feature is indicated by [+N] or [-N]

value. Segments may be linked to [+N] or [-N] specification (cf. Clements 1981).

Nasality-Bearing Units (NBU)

At the P-base level, we talk of the segments that bear the identified P-segment (i.e. nasal feature), these segments are vowels. Nasality in nasal consonants is said to be inherent. In other words, Nasality-Bearing Units are those segments that bear the feature of nasality. These segments allow for opposition between segments that bear nasality and those that do not (i.e., nasal vs. oral). The NBU's in Ékét are: (a, ɔ, i, ë, u). In this view, all phonetically nasalized vowels are achieved as a result of the assignment of the feature [N] obtained by association conventions.

Following the framework adopted in this work, once nasality is abstracted, all segments remain oral in their phonological representation. The motivation for this position is that the nasalized segments and their oral counterparts are mutually exclusive.

Association Conventions

The following are some of the conventions that will be adopted on the nature of spread of nasality:

- associate each NBU to one N-segment.
- Each N-segment is associated to at least one NBU.
- Association lines do not cross.
- The directionality of association is from left-to-right.

These association conventions compositionally map the autosegment +N onto the NBU's.

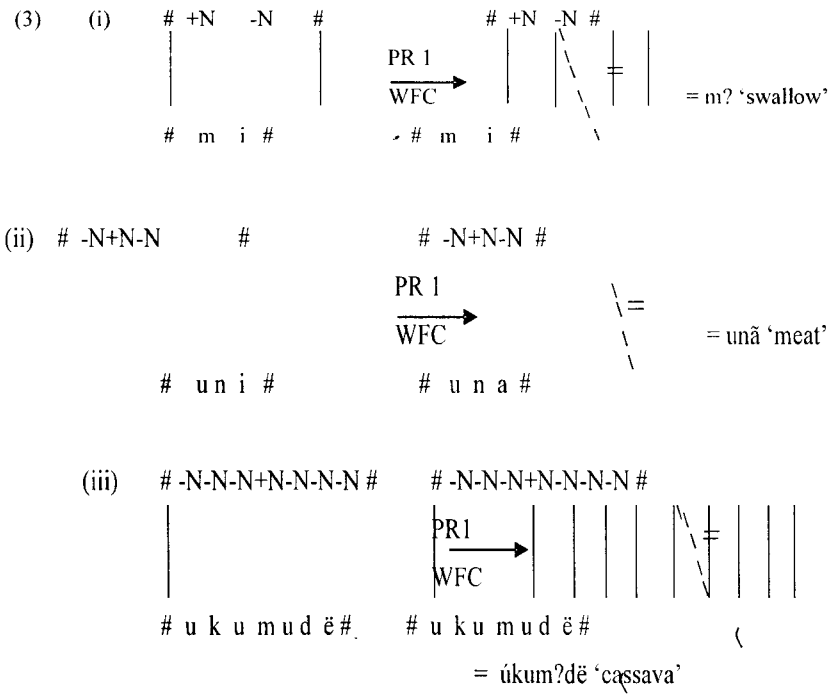
Nasality as a Floating Melody

Here, nasality is conceived as an autonomous feature. Hence, it is represented on a different tier from other segmental features, and the +N segment is not associated with the NBU's in the phonological representation. By virtue of this, nasality floats on a level separate from the NBU's and the Wellformedness Condition (WFC) links them together in a left to right manner.

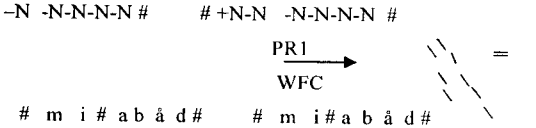
We will now consider some of the earlier nasalization rules using the prescription of autosegmental framework.

Nasalization Process

Here, we shall make the assertion that nasality affects oral segments that are preceded by nasal consonants. To account for this process, PRI (Phonological Rule) has been generated. However, what is observed in the segmental analysis is a reiterative rule application especially when two vowels follow a nasal consonant. The nature of this process shows that it can be captured autosegmentally. This process is shown in (3) below



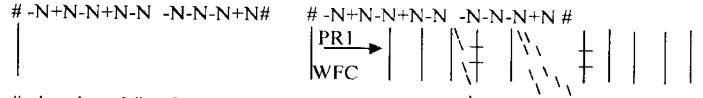
(iv) # +N –N -N-N-N-N # # +N-N -N-N-N-N #



m i # ab å d# # m i#a b å d#

= mîãbåd 'with a ladder'

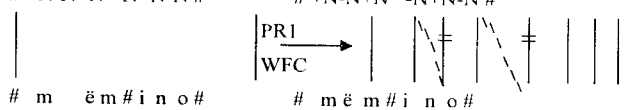
(v) # -N+N-N+N-N -N-N-N+N# # -N+N-N+N-N -N-N-N+N #



i n i n i#a f ë ç# # i n i n i#a f ë ç

= inînîãfëŋ 'dirty cloth'

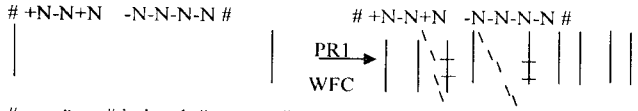
(vi) # +N-N+N -N+N-N # # +N-N+N -N+N-N #



m ë m#i n o# # m ë m#i n o#

= mëmîno 'catch thief'

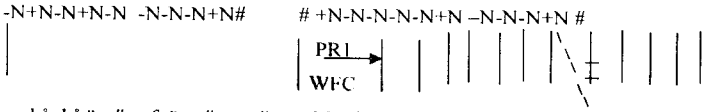
(vii) # +N-N+N -N-N-N-N # # +N-N+N -N-N-N-N #



m ë m#i j a h# # m ë m#i j a h#

= mëmîjah 'catch fish'

(viii) # -N+N-N+N-N -N-N-N+N# # +N-N-N-N-N+N –N-N-N+N #



n dådåëŋ#a f ë ç# # n då dã ŋ#a f ë ç

= ndådãŋ ãfëŋ 'wet cloth'

What is desirable in the autosegmental analysis of nasalization is the spread of feature in a conditioning environment.

2.1 Vowel Elision

Vowel elision is the systematic deletion of vowels in a language.

Deletion can be intra- or extramorphemic. The choice of which vowel to delete and at which position is determined by language-specific rule.

Ékét exhibits thirteen vowels at the phonetic level, eight oral and five nasalized. Like other Cross-River languages, Ékét does not exhibit diphthongs. However, it exhibits sequence of identical and unidentical vowels at underlying level. It should be pointed out that vowel harmony is not attested.

However, in Ékét, when two vowels come together at morpheme boundary, either of the two can be deleted in a clearly defined environment. This is observed in some collocations like: Noun + Noun, Verb + Noun and possessive constructions. The positional constraint affects vowels in V_1 and V_2. The phenomenon of vowel elision affects vowels /i/ and /a/. In Ékét, when vowel /i/ comes with another vowel and it occupies V_1 position at morpheme boundary, it gets deleted. However, it is retained when it occupies V_2 position. Consider the data in (4) below

(4)

(a)	/tì # ùdíá/ cook yam		[tùdíá] 'cook yam'
(b)	/dzí # údëh/ wash hoe	[dzúd	ëh] 'wash hoes'
(c)	/dzí # ús□/ wash plate		[dzús□] 'wash plates'
(d)	/dí # ùdíá/ take yam		[dùdíá] 'take yam'
(e)	/dzí # ùdíá/ wash yam		[dzùdíá] 'wash yam'

Note that deletion involving vowel /i/, (as shown in (4) above), occurs only when vowel /i/ comes together with vowel /u/ at morpheme boundary. However, if it comes in contact with other vowels at morpheme boundary either in V_1 or V_2 position it is retained. Observe the data in (5) below

(5) (a) /ìnó # ìbà/ [ìnó ìbà] 'two thieves'
thief two

(b) /àj□ # ítámá/ [àjè ítámá] 'we jumped'
we jump

(c) /émò # ítámá/ [émò ítámá] 'they jumped'
they jump

(d) /mé # íjáh/ [mé íjáh] 'like fish'
like fish

(e) /ídí # ádzù/ [ídí 'adzù] 'child's body'
child body

(f) /mí # áwå/ [míáwå] 'beat a person'
beat person

Based on the condition for V_1 deletion, the following rule is generated for this process:

V_1 V_2

$$\text{PR2} \quad \begin{pmatrix} +\text{syll} \\ +\text{high} \\ -\text{back} \end{pmatrix} \rightarrow \ddot{\text{o}} \; / \; \_\_ + \; \begin{pmatrix} +\text{syll} \\ +\text{high} \\ +\text{back} \end{pmatrix}$$

PR2 states that a high unrounded vowel will be deleted when it occurs before a high rounded vowel at morpheme boundary

V_2 Deletion

V_2 deletion process affects vowel /a/ (a low vowel). Vowel /a/ deletion occurs only when it comes after back vowels viz: /u,o,ë/. If this condition is not satisfied, the vowel will not undergo elision. For instance, if vowel /a/ comes before back vowels, it is retained along with the following vowel at morpheme boundary. In the same vein, if it occurs

before or after front vowels viz: /i,e,å/ it is not deleted. First, we will consider vowel /a/ retention following the conditions earlier specified in (6) below:

(6) (a) /aja # imide # kå/ [aja ímídè kå] 'He will not come'
He ASP come NEG

(b) /mba # ínu?ò [mba ínù?ò] 'bird's wing'
bird wing

(c) /àkpúìdzì # áwàwà/ [àkpúìdzì áwàwà] 'fat woman'
fat woman

(d) /ídí # ádzù/ [ídí ádzù] 'child's body'
child body

(e) /únà # ébú/ [únà ébú] 'goat's meat'
goat meat

(f) /úbá # éwá/ [úbá éwà] 'dog's hand'
dog hand

(g) /kà # úfà/ [kà úfà] 'go home'
go house

(h) /uba # úfë/ [úbá ufë] 'left hand'
hand left

(i) /ákpårå # akpukoro/ [ákpårå akpukoro] 'near the table'
near table

Apart from the above constraint, vowel /a/ in V_2 position after back vowels gets deleted. The data below exemplify this observation.

(V_2 Deletion)

(7) (a) /àkpúwo # áwå/ [akpúwowå] 'big person'
big person

(b) /ádzù # áwàwà/ [ádzùwàwà] 'daughter'
child woman

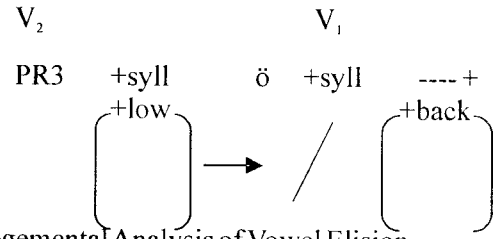
(c) /kërë # áfÝrÝ/ [kërëfårå] 'lick soup'
lick soup

(d) /këpë # ádìgå/ [këpëdìgå] 'open (the) door'
open door

(e) /dë # abudåd/ [dëbùbåd] 'dig (a) well'
dig well

(f) /ádzù # ánìnìåwå/ [ádzùnìnìåwå] 'son'
child man

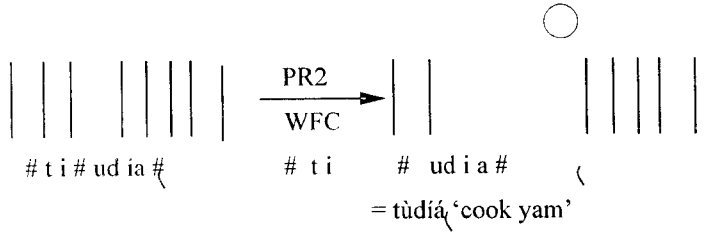
The following rule is generated to account for V_2 deletion in Ékét.



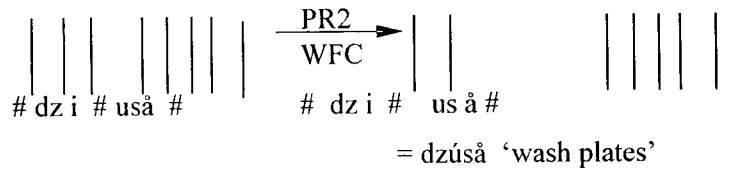
2.1 Autosegemental Analysis of Vowel Elision

Earlier, we made an assertion that ASP is unique in solving phonological problems. In this vein, deletion processes involving vowels will be handled using this framework. Earlier, we noticed that certain vowels get deleted when they occur in conditioning environments (cf. data 4 and 7). For these processes, two rules were generated viz: PR 2 and PR 3. An autosegmental account of vowel elision provides a simpler approach. Using the two rules as bases, a delinking rule can be employed to cater for the affected segments. Autosegmental representation of vowel elision is shown in (8) below:

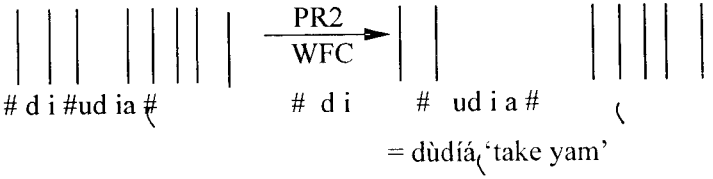
(8) (a) #CV VCVV# #CV VCVV#



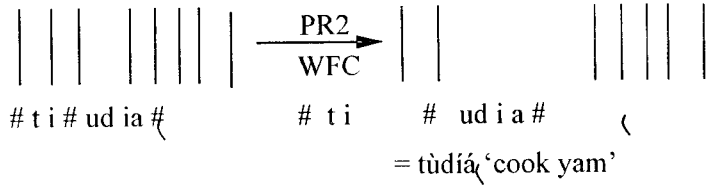
(b) #CV VCV# #CV VCV#



(c) #CV VCVV# #CV VCVV#

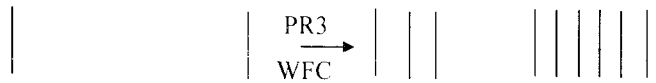


(d) #CV VCVV# #CV VCVV#



The above rule accounts for V_1 deletion. For V_2 deletion, the following Rule is required (i.e. PR 3)

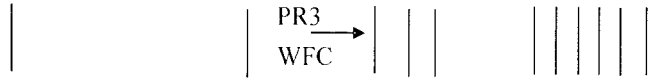
(9) (a) # CV VCVCVC # # C V VCVCVC



d ë # abubed # # d ë # abubåd

= dëbùbåd 'dig well'

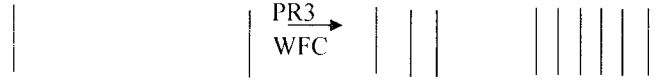
b) # CVCV VCVCV # # CVCV VCVCV #



k ë r ë # a f å r å # # k ër ë # a f år å

= k ë r ë f å r å 'lick soup'

(c) # CVC VCVCVC # # VCV V CVCVC #



adzu # awawaŋ # # adzu # awawaŋ

= ádzúwàwàŋ 'daughter'

What is observable above is that when a rule deletes a segment, it blocks linking. This means when a vowel is 'disconnected' from its superordinate node, it is prevented from being realised phonetically. This is a simple representation of deletion processes via ASP.

2.1 Spirantization

According to Trask (1996:332) "Spirantization is a phonological process in which a plosive is converted to a fricative". Evidence from Ékét shows that there is frication of the voiced alveolar stop /d/ when it occurs intervocalically. This observation makes the voiced alveolar fricative [d] an allophone of its stop counterpart. We shall, first, consider a sample data to see the distribution of [d] and [d]. This is shown in (10) below

(10) (a) [dë] 'dig'
[fåd] 'blow (with mouth)'
[dë] 'pull'

[idaebak] 'beard'
[údëh] 'hoe'
[ndík] 'fear'
[dódù ítìn] 'fifteen'
[édë] 'sheep
[ìkìd] 'tortoise'
[ndá] 'louse'
[íkàd] 'basket'
[édèh] 'teeth'
[tídé] 'dream'

From the above data, it is observed that the distribution of voiced alveolar fricative [d] is restricted to intervocalic position. The unreleased [d^0] occurs word-finally while the plain [d] occurs at word-initial position and after a consonant. On this premise, the plain [d] is chosen as the basic form from which others are derived. To account for frication process in the language, we generate the rule below:

cont

PR 4 $\begin{pmatrix} +\text{ant} \\ +\text{cor} \\ +\text{voice} \end{pmatrix}$ [+cont] $\longrightarrow$ [+syll] [+syll] —

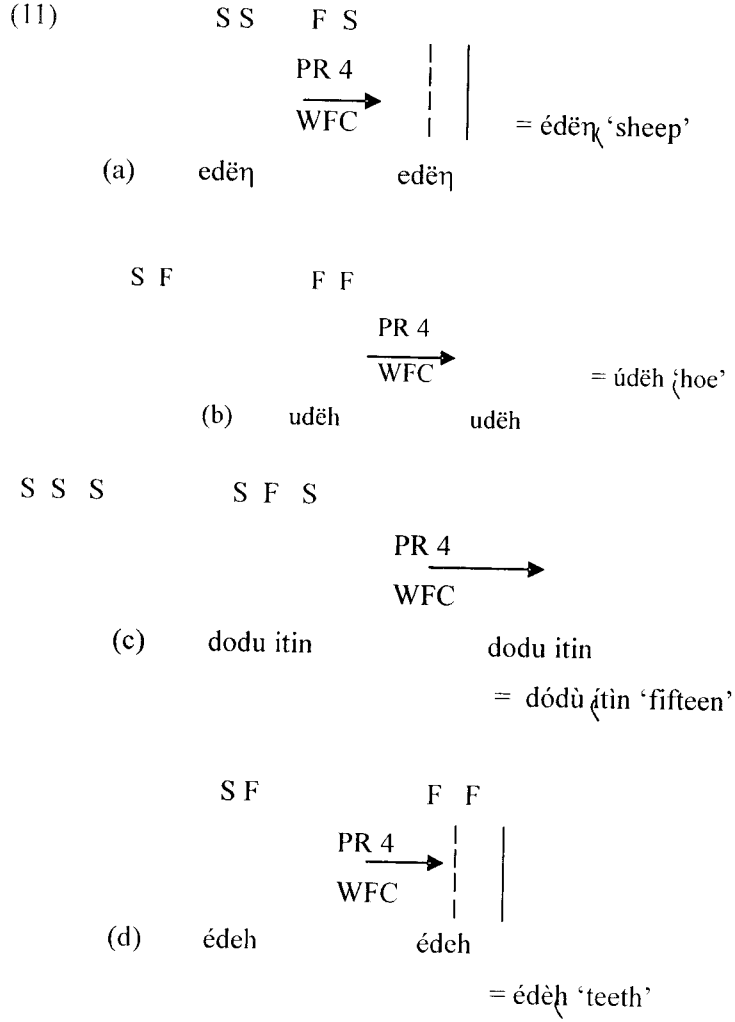
Following this rule, the phonemic shape of items (d), (d), (g), (h) and (l) will be

(d)	/idaebak/	'beard'
(e)	/údë/	'hoe'
(g)	/dódù ítìn/	'fifteen'
(h)	/édë/	'sheep'
(l)	/édèh/	'teeth'

2.1 Autosegmental Analysis

Here, we will attempt an autosegmental analysis of frication process in Ékét. This will be done with respect to the rule generated earlier (i.e. PR4). Under this framework, what is done is docking of feature once the conditioning environment is satisfied. The representation is given in (11) below:

(11)



Note that S and F stand for 'stop' and 'frication' respectively.

The above is a simple schematic representation of spirantization process in Ékét.

3.0 Evaluation and Conclusion

The purpose of this paper is to carry out the analysis of some phonological processes in Ékét using ASP as a theoretical framework. Thus far, we have proved that nasalization, deletion and spirantization can be better handled in Ékét using ASP as a framework. We have also established that autosegmental account of these processes becomes very necessary when one considers some limitations of the segmental theory. For example, segmental rule of nasal assimilation applies reiteratively (cf. PR 1), but this process is obtained in the autosegmental analysis by spread of feature once the conditioning environment is satisfied. Also, we have shown that frication as a process is abstractable. This is another addition to aspects of languages which ASP can effectively handle.

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