PalArch's Journal of Archaeology of Egypt / Egyptology

AUTOSEGMENTAL PHONOLOGY

Suha Rasheed Hamad Alkumet
Lecturer, Department of Translation college of Arts Tikrit university
https://orcid.org/0000-0002-6963-8120
Maysoon Kadhim ali
Asst. Lecturer, Department of Translation college of Arts Tikrit university
https://orcid.org/0000-0002-2072-049X
Nisreen Khalid Abbass
Asst. Lecturer, Department of English , College of Arts , Imam ja'afer Alsadiq University . Salah-Aldin
Email: Mohammed.alsad3@gmail.com
https://orcid.org/0000-0003-2629-1128

Suha Rasheed Hamad Alkumet, Asst. Lecturer, Maysoon Kadhim ali, Asst. Lecturer,Nisreen Khalid Abbass, AUTOSEGMENTAL PHONOLOGY, -Palarch's Journal Of Archaeology Of Egypt/Egyptology 17(7),ISSN 1567-214x

Abstract:

Autosegmental phonology is a theory of how the various parts of the articulatory organs -- the tongue, the lips, the larynx, the velum are coordinated and related. In this this research, it will explore autosegmental phonology, what are the principles of this theory and how is this theory performed? This study lies with three sections: section one give the problem of the study, the aims and significance of the stydy. section two explores the definition of autosegmental phonology and its principles. Section three will show the practical side of the research which is the application of the theory. Section three give the conclusion of the research.

Key words: AUTOSEGMENTAL . PHONOLOGY

SECTION ONE

INTRODUCTION

1.1 Background of the Study

Autosegmental phonology is an attempt to supply a more adequate understanding of the phonetic side of the linguistic representation. Viewed in

this light, it is a proposal at the same logical level as the idea that phonetic representation is a linear sequence of atomic units -- call them segments; it is at the same level as the suggestion that these atomic units are cross-classified by distinctive features. Autosegmental phonology is a particular claimabout the geometry of phonetic representations; it suggests that the phonetic representation is composed of a set of several simultaneous sequences of these segments, with certain elementary constraints on how the various levels of sequences can be interrelated – or associated (Goldsmith, 1976: 16).

Autosegmental phonology is a theory of how the various components of the articulatory apparatus -- the tongue, the lips, the larynx, the velum are coordinated. That is, at the most superficial, observable level, the linguistic signal is split up into a large number of separate information channels. Viewed from the production side, this consists of the specific commands to the larynx, the velum, the tongue, and so on. At an "abstract" level, this information no doubt comes about from splitting up a more unified representation (ibid: 16-17).

Keywords: Autosegmental phonology, principles of Autosegmental phonology, tiers, association line, well-formedness conditions.

1.2 Problem of the Study

The problem lies in the following questions:

1. What is meant by autosegmental phonology?
2. What are the principles of this theory?
3. How is this theory performed?

1.3 Aims of the Study

This study aims at achieving the following objectives:

1. Defining the meaning of autosegmental phonology.
2. Defining the principles of this theory.
3. Clarifying how this way is performed.

1.4 Significance of this Study

The importance of this study lies in clarifying the term of autosegmental phonology and its principles for researchers, academics, and EFL learners who are interested in phonology and its related theories.

SECTION TWO

THEORETICAL FRAMEWORK

2.1 Introduction

Autosegmental phonology is a framework of phonological analysis proposed by John Goldsmith in his PhD thesis in 1976. As a theory of phonological representation, autosegmental phonology developed a formal account of ideas that had been sketched in earlier work by several American linguists. Hence, the American linguists in the decade of the 1940's presented a fair amount of discussion regarding suprasegmentals, with contributions by, among others, Bloch, Firth, Harris, Haugen, Smith, Trager, and Wells. All begin with the initial assumption-- spelled out clearly, for example, in Harris (1944) and Bloch (1948) -- that logically the first procedure in linguistic analysis is to "slice" the linguistic signal vertically into a number of pieces – or can be called segments. Care must be taken, of course, to make sure that the signal is sliced finely enough to find the truly minimal units of the utterance. Once this process of "segmentation" has been completed, the classification of these slices may proceed. The formal representation of a signal sliced into segments is, of course, a linear sequence of elements, but this is due to the nature of the initial process of segmentation, rather than the inherent nature of the speech signal (Goldsmith, 1976: 5).

2.2 Principles of Autosegmental Phonology

An important property in any theory of phonology is how phonological forms and processes are presented, and it should be possible in any theory to give an account of any phonological form and phenomenon within languages (Sagey, 1986: 9). Goldsmith states that a theory as autosegmental can be judged according to three criteria: first the theory should be able to describe any phenomena in the language that the standard theory cannot, second the theory must present constraints on the acceptable representation, and third the theory must provide constrains on possible tonological rule in the language.

2.2.1 Multilinear Representation

The view of phonological representation as linear segmental and suprasegmental was changed by the production of multilinear phonology by John Goldsmith in his PhD thesis in 1976. In this theory phonological representation is not linear rather it is called "three dimensional object" which means there is not only one string of segments rather many sequences. These sequences (tiers) are associated to each other by association lines (Hulst and Smith, 1982:9).According to autosegmental approach the task of phonological theory is to establish language specific as well as language universal rules which regulate the linking of those autonomous parameters (Goldsmith, 1976: 16). Matthews (1977: 31) states that "certain phonological features may be realized variously in a single vowel or consonant or in two or more such units or in only part of one".The orchestral presentation of the word /pen/ is as follows:

Lips: close up … open …

Tongue: high and front … touch the palate

Velum: … raise … lower (Goldsmith, 1976: 22).

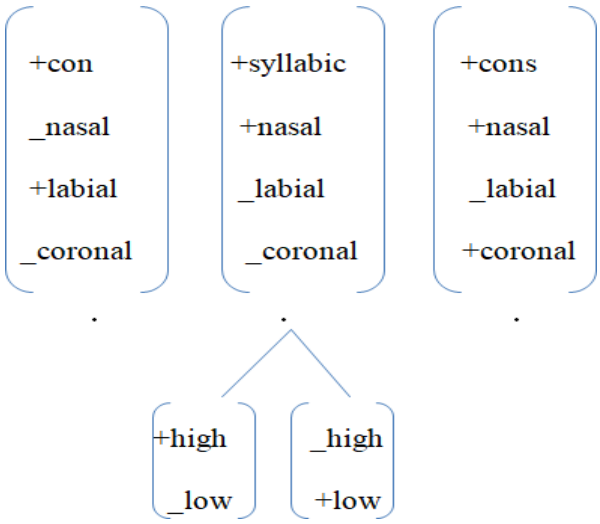


Figure 1: the representation of tones (Goldsmith, 1976: 23)

2.2.2 Parallel Tiers

Autosegmental representation consists of a number of independent tiers. These tiers are associated with a central tier which is called "skeletal or skeleton tier". The skeletal tier consists of elements called (slots). It gives the basic organization of consonants and vowels. The slots are represented by the

symbols C and V. The skeleton is used to determine the length of the segments linked to it so it is called “timing tier” (Roca, 1994:6).Goldsmith argues that tones may apply on more than one vowel or syllable and a syllable may be toneless.When an utterance is produced with tonal melody, the listener does not hear one sequence of segments with tone features. On the contrary, he hears two simultaneous sequences of segments consisting of tones on one hand and phonological segments on the other hand. Producing an analysis of such thing will require a parallel tier of segments, arranged and associated to each other by association lines (Goyvaerts, 2013:289).The tier that contains features as place and manner of articulation is called “melody” other tiers may be produced such as nasal, and tone tier (Liber, 1997:9).

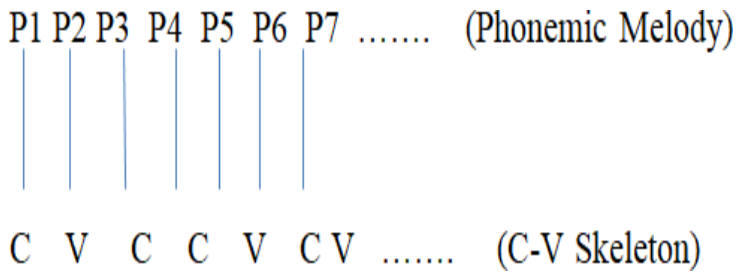


Figure 2: multiple tiers representation

2.2.3 Autosegmental Representation of Tone

Autosegmental theory views tone as an autonomous segment on a separate tier. Tone is independent from segmental tier and no longer presented in a linear array of segments. According to this theory, the segment may be deleted without affecting the tone and vice versa. Tones and segments are produced on separate tiers and they are linked by association lines. The symbols high (H) and low (L) are used to refer to tonal elements (Gussenhoven, 2004: 29), as shown in figure 3.

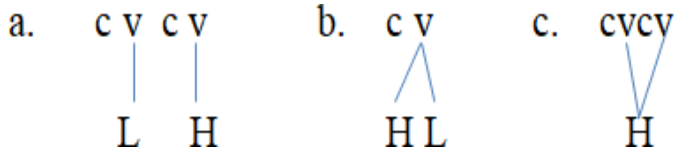


Figure 3: Multiple association

2.2.4 Contour Tones

Contour tones are tones that consist of two level tones HL, LH. A contour tone is a combination of two or more basic tones, for example a rising tone consists of a low tone plus a high tone.Contour tone acts like two successive tones even if it could not be broken into a sequence of two tones (Katamba,1989:190).Also, contour tones involve a changing state. They are opposed to level tones in which the pitch is stable. Segments that contain a contour tone are compared to affricates (Hulst and Smith,1982:6). Theautosegmental representation of contour tone is shown in figure 4.

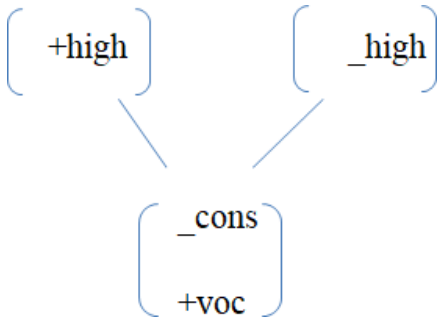


Figure 4: Autosegmental representation of contour tones

2.2.5 Stability of Tone

If a vowel has been deleted, the tone it was bearing does not disappear but moves to other vowels. The tone has stability which remains independently of other levels of representation. So, the tone melody stays stable despite of the modification on the syllabic structure(Goldsmith,1976:31). In multilinear representation, tones and segments are presented on a separate tier, so segments can be deleted without affecting the tone. The remaining tones are re-associated with other segments (Jensen, 1993:12).

If the tone of a vowel is specified as a feature of the vowel, pitch will change as any other characteristics of the vowel.The tone will be deleted if the phonological rule deletes the vowel. To prevent the tone from deletion, “tone copy” may be used. Tone copy rule copies the tone that should be deleted to its neighbor (Goldsmith, 1976:30).

….. à í …..

….. à ǐ ….. (Tone copy)

……. Ǐ ….. (V-deletion)

Figure 5: Tone copy

The other solution to prevent the vowel from deleting is to use "derivational constraints" which are applied as a general rule or as language specific rule. According to "derivational constraint", when a segment having a high tone is deleted, the high tone is transferred to the nearest syllabic segment (Goldsmith, 1976:30).

2. 3 Association Lines

Goldsmith presents association lines to link different tiers to each other. Katamba (1989:188) shows that in autosegmental phonology, phonological representation is no longer seen as simple rows of segments and the phonological rules are not taking place at one single level.On the contrary, theyare regarded as complex arrays of elements arranged in different levels or tiers. Association lines are used to link elements on different tiers. Phonological rules have an effect on modifying segments and also change the way in which elements on different tiers are associated to each other. The autosegmental notation that governs the association and the well-formed representation of tiers is:

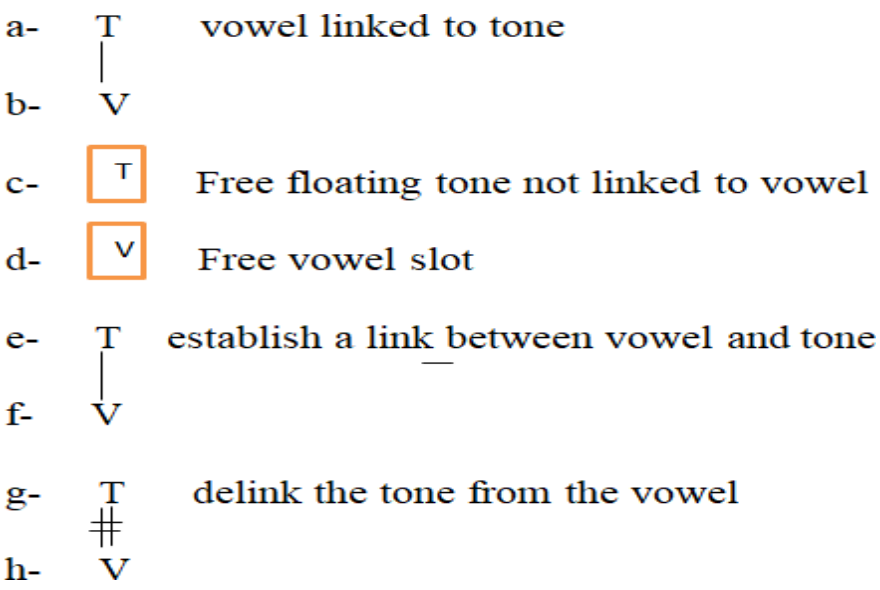


Figure 6: Association Conventions

In addition to linking tones to units, phonological rules may also delink tones, the association line may be deleted. When a rising tone is preceded by

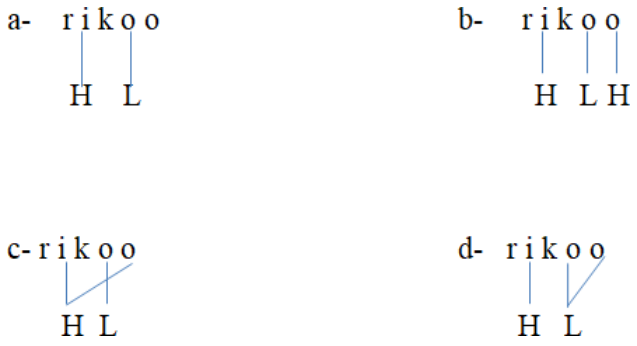
a low tone, the low tone is deleted. The broken association line indicates tone spreading(Katamba,1989:191).

2.4 Well-Formedness Condition

Well-Formed Conditions can add and delete association lines in any point during the derivation process. According to Goldsmith, association rules are necessary and are found in the early stage of derivation process (Goldsmith, 1976: 117). Clements (1980:45) states that to guarantee that all representations are produced without any ambiguity, a well-formed condition is introduced for each pair of association lines. The well-formed conditions specify the set of well-formed association and correct representation. Those conditions also deal with ill-formed representation by adding or deleting association lines. The well-formed conditions are:

1. All tone bearing units are associated withat least one tone.
2. All tones are associated with at least one tone bearing unit.
3. Association lines do not cross each other.

For example, the word “rikoo”



In (a), it is not well-formed because one tone bearing segment is not associated, while (b) is a well-formed because all tones bearing units are associated. On the other hand, (c) is not a well-formed because two association lines cross each other and (d) is a well-formed because no association lines cross each other (Clements, 1980: 44).

Clements and Fords (1979:182) claim that well-formedness conditions must be more specific. So, they presented three association conventions:

a. Mapping

According to mapping rules, tones are linked to tone bearing units in one to one method from left to right, until no tones or tone bearing units are left.

b. Dumping

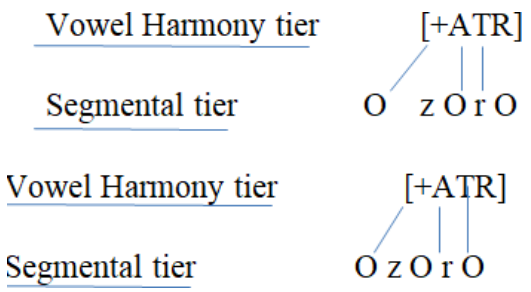
Unassociated tones are linked to the nearest tone bearing units.

c. Spreading

Unassociated tone bearing units are linked to the closest tone on left or right.

2.5 Intonation

Although autosegmental theory has been applied primarily on tone, the theory extended its analysis to other phenomena, such as intonation. Goldsmith gives an analysis of intonation in English Accented languages. He distinguished or specified one of the syllables as prominent and the other syllable will be the tonic syllable (Goldsmith,1975:182).Clements (1980:43) states that vowel harmony consists of co-occurrence restriction upon the vowels which may occur in a word. Vowel harmony is the process in which vowels in the words should share one or more phonological features. Vowels must have features as [front, back], [high, low], [rounded, unrounded]. The difference between vowel harmony and other suprasegmental features is that harmonizing features as [back, front, high…. etc.] are considered features of segments, but are separated from the vowels and placed on another tier (harmonizing tier). On the other hand, tone and stress are not features of segments and are placed on different tiers. When vowel harmony happens these features spread to all vowels in the word.



Katamba (1989:211) stated that vowel harmony can be described in terms of autosegmental by following these principles:

1- identifying the set of harmonizing features that are suprasegmentalised and placed on tiers

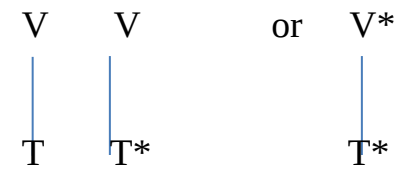
2- identifying the elements that bear the harmonic features.

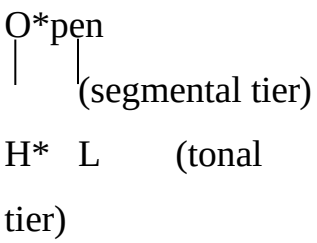
3- identify the opaque segments (vowels that should bear harmonic features but they fail to do that).

Nasalization deals with issues such as nasal spreading, stability,re-linking and deletion .the arrival of autosegmental has reduces the dependency over the rules of generative phonology. Whenever an oral sound is produced with a degree of nasality, the phenomenon is called nasalization (Babarinde, 1993:23).

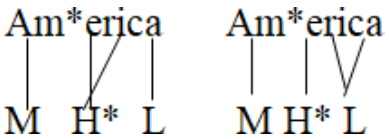
2.6 Phonological Analysis Coding Scheme

There are two principles of association “one to one” principle which is related to tone languages and “accentual principle” which is related to stress languages as English. According to “accentual principal”, there are two stars: one on the syllable, and the other is on the tone. According to the accentuation principle, the starred elements are associated with each other as in:





Sometimes there are two possibilities of association, as in:



The domain of tone may be a single vowel or a syllable and contour tones are found on short vowels. Contour tones occur when there is non-final pitch accent (H) and final low accent (L), as in:

Ballo*on or Japa*n

H* L H* L

Another example is when the pitch accent is on an initial syllable, the vowel takes two tones, as in:

Si*milar

M H* L

Concerning compound words, if they are pronounced in isolation, each word will be stressed and receive a star and the tone will be distributed on them. For example, the second word is stressed so it receives star:

Heavy- ha*nded

L H*

SECTION THREE

PRACTICAL FRAMEWORK

In this section, (4) English sentences are analyzed according to autosegmental theory.

1. The heaven declare the glory, the greatness, the majesty, the worth of God.

According to autosegmental theory, stress must be assigned depending on stress rules. This sentence starts with a high tone, falling in the middle, then rises up until the end of the sentence.

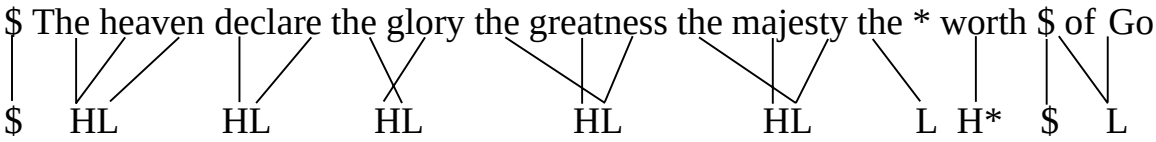
1 *

1* 3

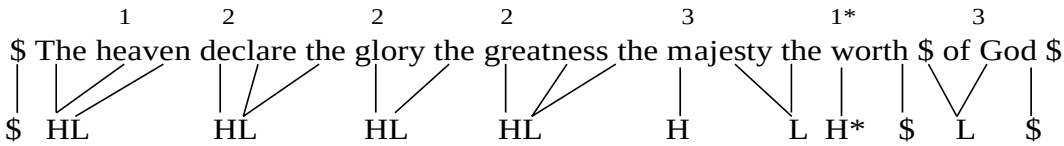
$ The 'heaven de'clare the 'glory the 'greatness the 'majesty the 'worth $ of 'God $

$ $

$

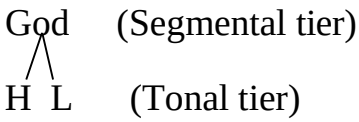


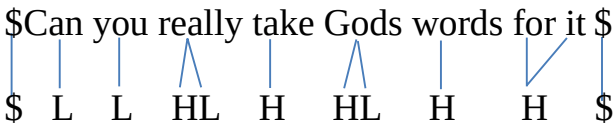
According to Well-formed conditions, association lines do not across each other and no TBU stays without association.To solve this problem, some words are associated to the preceding low tone. According to Obligatory Contour Principal, no identical tones are allowed so they are reduced to one tone, as shown below:



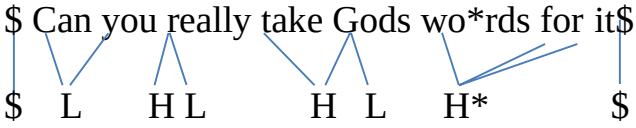
2. Can you really take Gods words for it?

The highest intensity has been on the word (wo*rds), so it takes the first stress (1-stress) and it is assigned as the tonic syllable. The sentence has a rising tone. The word ‘God’ has a contour tone.The tone first rises, then falls on the same short vowel as shown below:



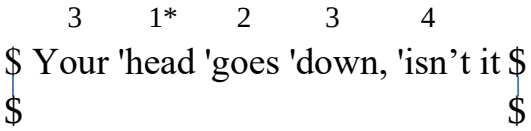


According to Obligatory Contour Principles, identical tones are not allowed, so each identical tone will be replaced by one tone. The association lines are redrawn and tones spread left and right.

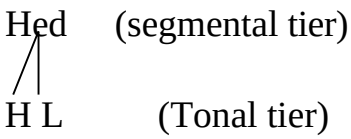


3. Your head goes down, isn’t it?

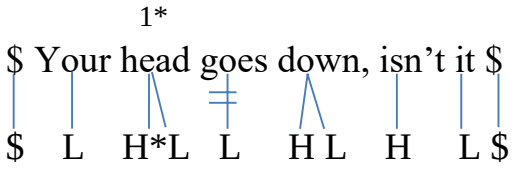
The tonic syllable is on (head), it has the highest pitch in the sentence and a high intensity, as shown in this figure:

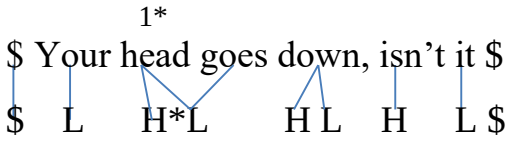


WFC and association lines are drawn. The sentence has a falling tone, as shown in this figure:



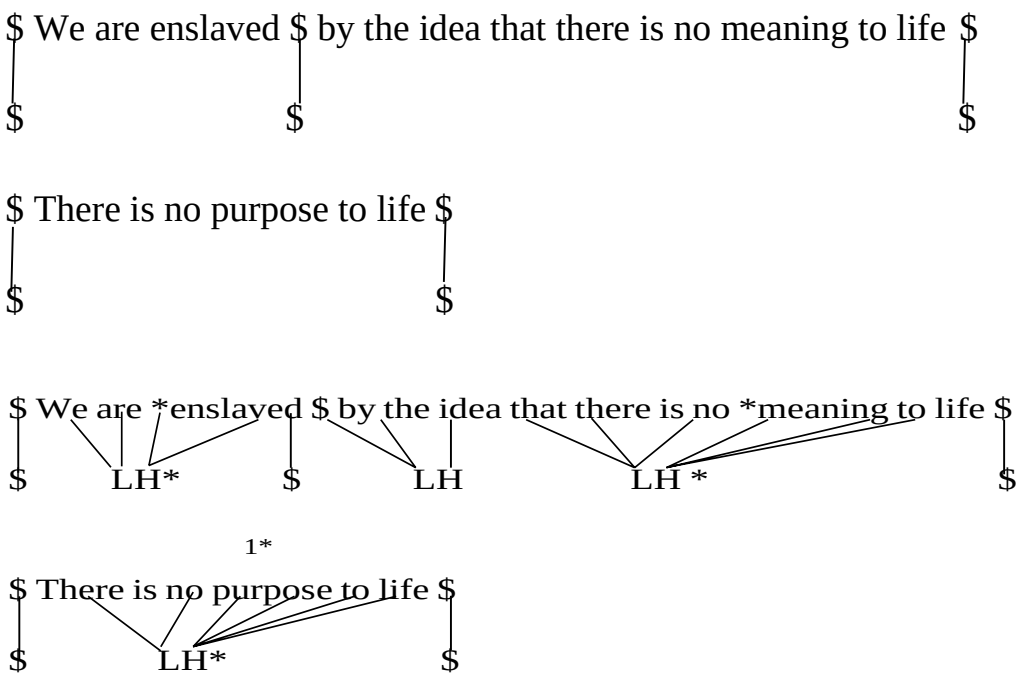
There is a contour tone on the word head /hed/. The word starts with a high pitch then falls down on the same short vowel. The identical tones are deleted, so the low tone on the word 'goes' is deleted and it is associated with the preceding low tone.





4. We are enslaved by the idea that there is no meaning to life, there is no purpose to life.

The sentence has a falling tone. In this sentence, the first tone unit ends with a high tone to indicate that there is something to follow and that the speaker has not finished speaking.



SECTION FOUR

CONCLUSIONS

This section presents the conclusion of the theoretical and the practical analysis made in this study. This study has found:

1. Autosegmental theory presents and analyzes intonation in a new way different from other theories and models that deal with intonation.

2. The tone of a vowel is not considered one of its features, there is no specific tone for a specific vowel. In any language system, every syllable has a fixed feature as bilabial, dental or + - nasal, but there is no high or a low syllable. However, the same syllables may have different tones in different words.

3. A vowel may be deleted or substituted or becomes disyllabic without affecting the tone, rather the tone shifts to the neighboring syllable. Nevertheless, the same tone may spread on different syllables; therefore, tones are assigned on a separate tier from the segmental tier.

4. Sound variation as pitch, stress and rhythm are very important in delivering any speech and the intonation pattern has a role in differentiating

sentence types. It has been observed the sentences have a low tone. The falling tone is used to emphasize the idea.

REFERENCES

Babarinde, O. (1993). Nasalization in Yoruba: the onko dialect perspective. Nigeria: university of Nigeria.

Goldsmith, J. A. (1976). Autosegmental phonology. Doctoral dissertation,Massachusetts Institute of Technology, USA.

Clement, G.N. (1980). Vowel harmony in nonlinear generative phonology: an autosegmental model. Indiana University Linguistics Club, Bloomington, Indiana.

Clements, G. N. and Ford, K. C. (1979). Kikuyu tone shift and its synchronic consequences.Linguistic Inquiry10, 179-210.

Goyvaerts, D. (2013). Phonology in the 1980's. John Benyamin's publishing

Gussenhoven, C. (2004). The phonology of tone and intonation. Cambridge University Press.

Hulst, H. & Smith, N. (1982). An overview of autosegmental and metrical phonology. In: The Structure of Phonological Representations, Part/, H. van der Hulst and N. Smith, eds. 2-45: Foris Publications.

Katamba, F. (1989). An Introduction to Phonology. London: Longman.

Roca, I. (1994). Generative Phonology. London & New York: Routledge.

Sagey, E. (1986). The Representation of Features and Relations in Non-Linear Phonology. PhD dissertation, MIT, Cambridge, MA.