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## **A Pedagogical Study of Tone Neutralization in Cibemba Phonetics and Phonology** (pp. 425-435)

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### **Abstract**

*The paper discussed the concept of tone in African languages generally and in the Bantu linguistic group in particular from a pedagogical perspective. Using illustrative examples from Cibemba, the major language of Zambia, with an air of extension in DR Congo, in comparison with Germanic and Romance languages, the paper pointed out various theoretical issues surrounding tone. Amongst issues discussed was the need to put tone in context as opposed to approaching tone purely from the perspective of lexical semantics or content. This view of tone generally defined as syllable-based relative pitch contrast effectively and separates segmental units from supra-segmental units in order to satisfy pedagogical needs. For instance, the French text remains recognizable regardless of whether or not accents are omitted, thanks to context. Similarly, the French dictation exercise stands to benefit from using isolated vocabulary words in addition to narratives or passages that put text in context. The issue of tone context also raises the question of definition of phonetics and how it differs from phonology. Last but not least the paper argued that tone patterns represent dialect variations and their evolution to the extent that diachronic and synchronic tests can be administered.*

## **Introduction**

It is generally agreed among linguists that African languages of the Bantu sub-group are tone languages. The issue of tone is in fact so critical to existing knowledge concerning Bantu languages that in his classification of Bantu languages Guthrie treated tone as one of the 'primary characteristics' as opposed to 'secondary characteristics' (Guthrie, 1948). Regardless of how different researchers understand the concept of tone, the consensus is that certain Bantu languages are not tone languages at all, for example, Swahili the major language of Eastern Africa is not a tone language, neither is Tumbuka of Central Africa. As a result of this conceptual divergence two distinct schools of thought have emerged in relation to tone in teaching phonetics and phonology classes to students of African languages generally and Bantu languages in particular. The dominant approach undoubtedly corresponds to the tone institutionalization tendency to which scholars such as Pierre Alexandre and Luc Bouquiaux belong. The voice critical of unbridled usage of tone theory in the phonetics and phonology of African languages could be exemplified by Serge Sauvageot and Carl Meinhof. In the same vain, Marie-Françoise Rombi and Jean-Marie Hombert (1988) declined to utter any sweeping statements concerning the existence (or indeed non existence) of phonological tone in Cibemba following intensive but non exhaustive computer analysis conducted in their Lab. While recognizing the merits of tone awareness among learners and speakers of African languages, the argument of the present writer is that the phenomenon of tone is essentially a phonetic feature that can be adequately accounted for using rules of phonetics. To that extent the approach of the present writer is closer to Sauvageot and Meinhof than to Alexandre and Bouquiaux.

## **Methodology**

### **Tone Literature**

A certain number of dissertations for partial completion of Doctor of Philosophy degree concerning tone manifestation in Cibemba exist. These include Dauphin-Tinturier (1983), Givón (1969), Guthrie (1945), Kula (2002) and Sharman (1963). Similarly, various theses for the partial fulfillment of requirements of Master of Arts and Master of Philosophy degrees, including Kashoki (1968), Kasonde (1984), Kasonde (1985) and Spitulnik (1985) have generally rallied in defense of the same point of view. Without exception, these dissertations and theses have accorded tone manifestation in Cibemba a phonological status in the sense that tone can govern lexical and grammatical distinctiveness, i.e., meaning. The existence

of these works written under unquestionably valid scientific conditions using enormous resources important as they may be must not frustrate or hinder the spirit of scientific inquiry in search for viable alternative scientific explanations.

Various articles on Cibemba published in scientific journals have also raised the issue of phonological tone. These include Hyman (1992; 1994; 1995), Kasonde (1996), Mann (1969), Philippson (1999) and Sharman (1956). These are all invaluable documents but fall short of stopping the tide in favor of a re-think of theories of tonology in terms of contextualization.

Three notable published books in the area of Cibemba grammar have also recognized the existence of tone in the language (Ministry of Education, 1977; Schoeffler, 1907; Van Sambeek, 1955). In all these works, the question concerning 'context' remains unanswered.

### **Lexical Context**

The delimitation of lexical context understood as part of speech, word class or grammatical category constitutes a necessary condition of valid commutation. In some cases, the minimal pairs used to identify the phonetic and phonological entities of the Cibemba language lack valid lexical contextualization. In other words, for any given lexical unit to feature in the minimal pair, that lexical unit must belong to the same lexical group. Hence, the verb cannot be commuted with the noun, etc. This largely explains why various earlier descriptions insisted on according a phonological status to tone contrasts.

### **Paradigmatic Context**

The next step involves defining the paradigmatic context. The paradigmatic context depends on the syllabic structure of the language being analyzed. In the case of Cibemba and related languages, three syllabic types are generally used, namely initial, median and final positions. When only one single syllable constitutes the lexical item, then the concept of initial-median-final position automatically becomes redundant. Ideally a set of paradigm-specific phonological tables must be constructed for any language. In practice, one discovers that certain linguistic typologies (such as Fulfulde) are more susceptible to consonant shift. In Cibemba phonetics and phonology, various consonant shifts are also productive: p>f; b>f; t>s; l>s; k>s. The existence of tone variations raises questions concerning 'inherent ness' (Van Spaandonck and Bouquiaux, 1971). In other words, each lexical item must bear a speech

community-specific phonetic structure that defines accent. Similarly, social status can influence the phonetic realizations thereby creating distinguishable 'sociolects' (Trudgin, 2000; Crystal, 2003). In addition, the existence of supra-segmental and segmental neutralization needs to be adequately accounted for.

### **Syntactic Context**

The combination behavior of phonetic and phonological elements in terms of syntactic context also needs to be analyzed. In other words, the question of lexical tone simultaneously involves both paradigm and syntax. In this regard, the linguist must address the question of both grammatical agreement and tone agreement. For instance, it is a recognized fact that lexical items maintain the same tone pattern regardless of syntactic context (Subject, Object, etc). Does that imply that the L-Lexical (or H-Lexical) item in SUBJECT function will impose L-Tone (or H-Tone) on the SUBJECT-PRONOUN in order to transmit a meaningful signal? Does a distinct L-Object Infix (or H-Object Infix) represent an L-Object and H-Object respectively? Similarly, what is the effect of the OBJECT-INFIX on the tone behavior of an L-Verb (or H-Verb)? These and other related questions need to be addressed in order for the phonetic and phonological status of tone in Cibemba to be adequately determined.

### **Semantic Context**

The next point concerns distribution of tone contrasts in various semantic contexts. As far as terminology of different semantic domains is concerned (names of body parts, internal organs, diseases, domestic animals, wild animals, individuals, ethnic groups, languages, countries, plants, human relationships, etc), the study discovered that ambiguity arising from common segmental and supra-segmental units was not found in Cibemba phonetics and phonology. What that means is that in Cibemba names of two countries, such as Congo (Kinshasa) and Congo (Brazzaville) cannot arguably be distinguishable on the basis of tone contrast. Similarly, common household tools, such as 'hoe' and 'axe' cannot be distinguished from each other, in Cibemba or any other African language for that matter, on the basis of tone contrasts (Kasonde, 2002). Furthermore, the existence of two different numbers distinguishable on the basis of tone contrast is simply a castle in the sky. This pattern goes on and on, *ad infinitum*.

### **Synchrony Context**

When different dialects are well-described and then placed in a comparative perspective (synchrony), it becomes clear that phonological tone is not the basis of dialectal variation. What that implies is that two segmental lexical units where these are identical only manifest dialectal differences at the phonetic level. In line with all dialectal behavior, certain phonological segments may differ according to rules governing sound shifts. e.g., Bemba Dialect [ci] > Bisa Dialect [ki]. To prove the existence of phonological tone contrasts at the synchronical level in Cibemba, it would require the juxtaposition of sufficient minimal pairs that manifested regularity and consistency between Cibemba and one of the dialects, such as Bisa. Such corresponding tone contrasts simply do not exist for the dialects of Cibemba.

### **Loan Word Context**

Like all human languages, Cibemba borrows words from different languages to convey certain meanings. Many loan words in Cibemba come from distant languages, including Afrikaans, Arabic, Chinese, English, French, Hindi, Latin, Portuguese, etc. In some cases, the borrowed word transits via an intermediary language, such as Swahili and Zulu. To prove tone existence in Cibemba beyond doubt, it would be necessary to identify minimal pairs for the word borrowings. For instance, Cibemba [meleki] > Afrikaans [melk] 'milk' should possibly exhibit segmental and supra-segmental contrasts at the minimal pair level for a linguist to argue that tone is a viable source of distinctiveness in Cibemba.

### **Musicological Context**

When lyrics of a given song in Cibemba are sung, all tone differences can become imperceptible due to tone neutralization. This means that tone distinctiveness is largely a phonetic feature that cannot render communication unintelligible. In other words, from a musicological point of view, tone is secondary to segmental units. If tone was really essential for communication, then tone would be perceptible even at the musicological level.

### **Results**

To determine the phonetic and phonological status of tone in Cibemba, this study has applied principles of commutation pertaining to context, namely lexical, paradigm and syntax. The study has also applied semantic, synchrony

and diachronic criteria. The results show that distinctive low and high tone contrasts exist in Cibemba.

(1)	Cibemba			
	H: <i>amabala</i>	>	a ma ba la	'spots'
			H.L.H.H	
	L: <i>amabala</i>	>	a ma ba la	'gardens'
			L.H.L.L	
	H: <i>imba</i>	>	i mba	'(sg) sing!'
			H.H	
	L: <i>imba</i>	>	i mba	'(sg) dig!'
			L.H	

The concept of tone neutralization applies at the verbal level in various ways. Such is the case, for instance when the imperative mood is replaced by the subjunctive:

(2)	Cibemba			
	H: <i>wimbe</i>	wi.mbe	'(sg) sing/dig'	
		H.L		

By suggesting that a tone is either H or L, the study does not imply that the relative contrasts are absolute. The degree of pitch contrast always depends on the context. The context includes the type of consonant and vowel found in the syllable, expressiveness as well as syllable position and grammatical function.

### **Discussion**

The existence tone contrast between high and low tones in African languages needs to be understood as a phonetic requirement of any intelligible linguistic communication. The tone pattern plays a critical role in the identity of individuals and social groups. When different language groups such as English (Germanic) and Italian (Romance) are compared, it becomes clear that context is an integral part of lexical semantics. As the case of English shows syllable stress can be used to derive nouns from verbs (English: `increase (N) vs. in`crease (V). Similarly in Italian accent is used to differentiate `termino from ter`mino. It is therefore perfectly normal in human language to distinguish prosodic features such as tone and vowel length from non prosodic features. In certain languages such as French, the

representation of prosodic features is achieved by using diacritic marks, also generally referred to as accents.

### **Conclusion**

The study has shown that previous studies of tone contrast in African languages generally and in Cibemba in particular laid emphasis on 'context in tone' at the expense of 'tone in context' in phonetics and phonology. As a result, the production of works concerned with grammar, including lexicons, spectrograms and pragmatics have suffered from serious neglect. If researchers in the 21<sup>st</sup> century can allocate the same amount of resources and energy to 'tone in context' and thus concentrate on non tone aspects of Bantu phonetics as they did for tone in the 20<sup>th</sup> century, then one could expect a renaissance of African Studies.

### **Recommendation**

The importance of tone in African languages generally and Bantu languages in particular cannot be over emphasized. Tone accounts for individual and group identity in various linguistic communities and groupings. To a certain extent tone can also serve as the basis of lexical semantics (i.e.; polyphony), the same way that lexical semantics can be derived from the same phonemic sequence (i.e.; poly-semis) or arriving at a common semantic sphere from different lexical units (i.e.; synonymy). The study would therefore make at least two different recommendations pertaining to the analysis of tone distinctiveness.

The first recommendation is that further descriptive research work is needed in the area of productivity of tone both language-specifically and across languages. In particular such studies need to show how tone productivity differs from the other prosodic and related sources of semantic distinction.

The next recommendation is that the curriculums of studies in African languages need to include tone among topics that deserve to be learnt at all levels of education from pre-school right up to university. In promoting tone consciousness, the study is not prepared to recommend its inclusion in orthography reform for African languages. The considered view of the present study would be that the inclusion of tone marking in orthography defeats the whole purpose of linguistics, namely the development of among other things simple and practical solutions for human language technology.

Table 1 Linguistic classification of Cibemba (M42)

<b>Gro/Lan</b>	<b>10</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>60</b>
1	Pimbwe	Wanda	Nyakyusa	Taabwa	Biisa	Lenje
2	Runga	Mwanga		<b>Bemba</b>	Lala	Soli
3	Fipa	Nyiha			Swaka	Ila
4	Rungu	Malila			Lamba	Tonga
5	Mambwe	Safwa		Seba		
6		Iwa				

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