OSMANIA PAPERS
IN
LINGUISTICS

LINGUISTIC REALITY AND LINGUISTIC THEORY

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It is obvious that linguistics is concerned with language, but the linguists differ among themselves on the nature of the language that should be the object of description of their discipline. The linguistics of the nineteenth century was preoccupied with the changing nature of the language and consequently the historical relation between languages. Those linguists perceived the reality of language in its relation to time. They, of course, raised the question whether the change is a phenomenon of the system, which is abstract and constructed by the theory or of the individual units, which are concrete and experienced by the speakers, and their answer was in favour of the former. On the basis of this belief they proposed laws of sound change which are as regular and predictable as physical laws. They also developed a vigorous and objective methodology in discovering these laws. However, maintaining the universal application of the laws to the entire corpus of a language was possible only when the corpus was "purified" to exclude certain "aberrent" data for which alternative explanations should be provided such as influence of another system (i.e. mixture or borrowing between languages or dialects), influence of another subsystem of the same language (i.e. analogical creation) and so on. These influences are extraneous to the language under change but are still linguistic phenomena and are not extralinguistic in the sense of coming from outside the domain cf language. We shall return to these issues later.

The linguistics of the twentieth century is preoccupied with the structural and generative nature of the language and consequently the typological relation between languages. These linguists perceived the reality of language in its relation to a struc-

ture in the sense that a unit has meaning only in relation to other units all of which form together a structure. They propose two kinds of relations viz., the paradigmatic relation, which defines the membership relation in a class and the syntagmatic relation, which defines the cooccurrence (and interactional) relation between classes. They also believe that the structures are generated by specific rules (called morpheme structure and phrase structure rules) and the related structures are derived from one of them by specific rules (called phonological and transformational rules). This perception of language, *ipso facto,* requires the linguist to treat it in terms of abstract system and relations and not in terms of concrete units.

This brings us back to the question of language as the object of linguistics. Ferdinand de Saussure, who highlighted the structural nature of language in modern linguistics, insisted that linguistics should study the language as a social product and not as an individual product. He made a distinction in French between *langue* and *parole,* which may correspond with language and speech in English. The former is the abstract system and the latter is its actual realization by speakers and is subjected to their individual, social and situational characteristics. The object of linguistics for Saussure is language. Noam Chomsky, who brought to lime light the generative nature of language in the recent years, made a similar, but not identical, distinction between linguistic competence and performance. The former is the ideal speaker's unconscious knowledge of the grammar of the language and the latter is how he uses it subject to many extraneous conditions.

One could immediately see the idealization of reality through abstraction in this approach. This is nothing illegitimate or harmful about it and this is done also in physical sciences. This leads one naturally to selection of data or part of reality for intensive analysis and deductive genralization. Certain abstraction is done by any linguist. Even in phonetics, which studies individual sounds of a language, the variations in the pronunciation of different individuals and of the same individual in different times are ignored as irrelevant. In syntax, the unit of

description is the sentence and not the utterance, which is spoken and more often truncated and incomplete. Moreover, the linguistic importance of a sentence does not come from its frequency of use. Sentences which are crucial for a particular linguistic theory may have negligible percentage of actual occurrence in everyday speech. But for the linguist this is immaterial.

Nevertheless, this legitimate and widely practiced approach raises two important related questions. One is whether a boundary could be drawn nonarbitrarily between *parole* data and *langue* data; the other is whether both are independent of each other. Linguists differ in their answer to these questions. Chomsky answers the first question in the affirmative and the deciding factor for him to distinguish the two is the grammar itself. Certain metatheoretical notions of optimal grammar such as simplicity and generality (Chomsky 1965) determine the data to be included in the grammar, which, as a theory of language, consequently, defines the nature of language. As is clear, the circularity of this methodology of using the grammer itself for abstraction of data is vitiated only by metatheory.

Chomsky's answer to the second question about the independence of the two kinds of data is that description of *langue* precedes description of *parole*. He argues that the knowledge of the language system is a prerequisite for an understanding of its concrete manifestations.

There are others who disagree and the disagreement is of three kinds. One is from the point of view of coverage of data, which stems from the interest and orientation of the linguist. It takes the position that the manifestation or use of the language system is as crucial as the system itself. There are general principles independent of the individuals that govern the use of language. Therefore the linguistic competence or the knowledge of the language should be broadened to communicative competence to include the knowledge of the language use (Hymes 1971). The second disagreement stems from the objection to the idealization of data or reality. It argues that the ideal speaker, necessary to maintain the theory of competence, does not exist and therefore the distinction does not have empirical foundation

(Matthews 1979). The third disagreement arises from the consideration of failure to recognize the identity of a phenomenon because of the theoretical distinction between *langue* and *parole*. This failure also leads to missing a generalization by giving the same explanation at the level of *parole* in one case and at the level of *langue* in another case. To give one example (Givon 1979), the specific indefinite article introduces new information and therefore does not go functionally with the subject of a sentence, which generally indicates the topic of the discourse and therefore is old information. Though the specific indefinite article occurs with the subject in English, its frequency of occurrence is extremely low in actual speech. But the competence of the English speaker has no reflection of this fact. But in Krio, an English based creole, the sentence with a subject having specific indefinite article does not occur at all and it is ungrammatical. The competence of the Krio speaker reflects this absolute fact. Though both look like different kinds (negative and positive) of competence for the English and Krio speakers, they are the same phenomenon, about new information and subject mentioned above. Because of the theoretical distinction between *langue* and *parole* or competence and performance, they are made to appear different.

In spite of these objections, however, it cannot be denied that abstraction and restriction of linguistic study to *langue* or competence has helped to identify and formulate many regularities and generalizations about language. These generalizations go beyond a language and cover all languages. They make it possible to talk about the nature of the human language. They even help to define the human language distinct from other systems of communication. Linguistics then is not merely a science of description of language but is a definitive science.

The question, however, remains how far the generalizations are universal. The generalizations about individual languages have some data which do not fit with them and similarly the generalizations about all the languages, i.e. about the human language, leave out some languages. The generalizations can be

stated as rules and as such the question may be reframed for the human language whether the linguistic rules can be considered laws as the laws of physical sciences. The historical linguists have proposed many laws with reference to individual languages and families of languages. The descriptive linguists also, particularly the Relational Grammarians, have proposed laws applicable to all languages. The laws are by definition immutable and inherent and therefore have no exceptions. But the linguistic laws do change, are contingent on the interplay of nonlinguistic factors, and have exceptions. To meet this problem, some linguists, as mentioned above, have preferred selection of data. The selection is done distinguishing between core and peripheral data or by relegating some data as belonging to areas which are not the concern of linguistics. Other linguists have preferred to abandon the notion of laws and call the generalisations universal tendencies.

Tendency must be defined in statistical terms and it makes linguistic rules probabilistic rather than categorical. That is, the rules cannot be described as true or false and their operations must be described as more probable or less probable. This makes linguistic facts relative rather than absolute. This is a controversy of fundamental importance in linguistics. It is fundamental because the issue affects not only the rules of language but also its units; it undermines the notion of competence or *langue* as the universe of discourse of linguistics; and it reduces the autonomy of linguistics.

Take a universal linguistic rule which says that an element in a clause headed by a noun phrase called complex NP cannot be moved out of it (Ross 1967). The following sentence is ungrammatical because the underlined noun has been moved from the site marked-which is inside a complex NP (the claim that S)

    1.   *The *hat* which I believed the claim that Otto was wearing-is red.

(Note that the following sentence is grammatical because the underlined noun has not been moved out of a complex NP.

    2.   The *hat* which I believed that Otto was wearing-is red.

There are, however, exceptions to this rule. In the following grammatical sentence a noun has been moved out of a complex NP (it that S) (Ross 1967)

> 3.   This is *a hat* which I am going to see to it that my wife buys –

The head noun 'it' of the complex NP in this case is not a lexical noun. It is, for the operation of this rule, less of a noun. It makes the noun a gradient unit rather than a categorical unit. There is more evidence that the linguistic units like noun, clause etc. are not categorical in nature (Ross 1973)

There are also sentences which violate this universal rule as the following (Kuno 1976)

> 4.   This is the child who there is nobody who is willing to accept
>
> 5.   Then you look at what happens in languages that you know and languages that you have a friend who knows

This violation is not arbitrary and it takes place when the matrix clause is transparent in meaning which makes it possible for the moved noun to be the theme of the sentence. Theme is a discourse notion and therefore the complex NP rule is relative to discourse.

To give another example, the relative pronoun in English is optionally deleted as in the following examples

> 6.   a.   The woman whom you met is from Delhi
>   b.   The woman you met is from Delhi

But it is not deleted when the subject is relativised and the relative pronoun stands for the subject. (7) b is not a possible sentence and it is indicated by a star preceding it.

> 7.   a.   The woman who met you is from Delhi
>   b.   * The woman met you is from Delhi

To account for this fact, the linguist has a choice to restrict

the generality of the rule by adding an exception clause to say that the relative pronoun in English is optionally deleted except when it stands for the subject. (The exception clause actually is more complex as the relative pronoun standing for the subject of the passive sentence, as in the woman met by you is from Delhi, is deleted, but it need not concern us here). Or he can keep the rule general, allow the grammar to generate sentences like (7) b and leave their non-acceptability to factors like perceptual difficulty in processing sentences like them, as the verb in them, without a subordinate marker to warn, will be taken as the verb of the main sentence and then the remainder, the main sentence, will be left out unrelated. If he makes the exception clause dependent on a rule of perception rather than a grammatical notion like subject, he makes the linguistic rule relative to perception.

When a linguistic rule is probabilistic or relative, it raises questions about the nature, and even the validity, of the notion of competence. It is improbable that the human linguistic competence has a statistical index for the operation of every rule. It is not only a cognitive improbability but also the probability of rule is correlated with factors like communicative strategy, social setting etc. When a linguistic rule is relative to communicative, social, cognitive and diachronic factors, the competence cannot be linguistic alone. It must be a combined knowledge of all these.

One could, however, still ask whether the different facets of the knowledge could be factored out and their combined operation could be described through interaction between them. This is possible only when the data is delimited on metatheoretical grounds. This leads to the questions of explanation and empiricism, which may be taken up one by one.

A theory without explanatory value is not a good theory. For Chomsky (1965), a linguistic theory meets the conditions of explanatory adequacy if it provides a basis to evaluate and select among the competing grammars which meet the formal, internal conditions of descriptive adequacy of generality and simplicity. Formalism itself is not the ultimate explanation but it is a necessary step towards that ultimate goal as it states the fact in a

precise, general and explainable fashion. There are levels of explanation, and formalism itself is one level of explanation and it is linguistic, i.e. internal explanantion.

A rule relating to movement from inside a complex NP was cited earlier. The complex NP constraint is a formal device to explain at the linguistic level a property of movement of linguistic elements. As this constraint is found in all the languages, it is a property of the human language. It is a universal constraint on the form of the grammar. It does not, however, explain why this constraint must be a property of the human language. That explanation may be in perceptual strategy (Givon 1979) as a sentence is difficult to process when an element is moved out of its embedded clause obviating its grammatical relation with other elements in that clause. That this explanation is at a higher level than the formal explanation can be seen from the fact that another general linguistic fact follows from it In some languages like Hebrew, when a noun is moved it leaves a pronoun at the site and the movement in such cases is not constrained by the complex NP. The explanation is the same because the pronoun remains to indicate the grammatical relations of the moved noun in the embedded clause. Thus in the following sentence of a non-standard dialect of American English which leaves a pronoun, 'him' indicates that the head noun 'the man' has object relation with the verb 'bit' of the embedded clause

8. The man that I saw the dog that bit him.

Such explanations will cease to be possible hypotheses and will become proven theory if they are independently motivated in their own areas (Bever 1975).

The above is a case of non-formal or non-linguistic explanation for an obligatory linguistic rule. The formulation of such a rule as an invariant rule forces one to find specific explanation when it is violated, as in certain pragmatic context as mentioned above.

It is relatively easier to see the need for such non-linguistic explanations in the case of optional linguistic rules like passive. The non-economy of having optional rules giving alternative

forms at the linguistic level turns out to have a purpose functionally. The passive sentence, for example, serves to remove the agent from the topic position (Givon 1979) from the point of view of discourse.

This approach to explanation from linguistic phenomenon to non-linguistic phenomenon rather than tackling both simultaneously lies heavily on formalism and metatheory in linguistics. It has, however, certain pitfalls. The formalism could become deceptive and could be believed to be the explanation by itself when the metatheoretical considerations lead to an abstract analysis or abstract formalism. For example, the common characteristics of verbs and adjectives are explained by deriving both of them from a higher level abstract category (Lakoff 1970) or the shared features of some verbs and nouns derived out of them are explained by having a new notation $\bar{X}$ to cover both of them (Chomsky 1973). These are formalisms following certain assumptions and the non-linguistic explanation may not require them (Givon 1979). Thus the relation between formalism and explanation is not straightforward and sequential.

Another pitfall is the selective data mentioned earlier. In order to attain elegant formalism, certain data may be considered irrelevant. Then the question is whether the formal linguistics could be considered empirical. Before discussing this question, it would be useful to distinguish between empirical philosophy and empirical methodology (Lakoff 1974). The dominant paradigm of modern linguistics, viz., the generative linguistics, is not empirical in philosophy. It believes that there is innate linguistic knowledge such as structure dependency of rules which is not acquired through sensual experience. That it is empirical in methodology is strongly contended by its adherents and refuted by its critics. The criticism is against the abstraction of data and the major role played by metatheoretical assumptions and methodological considerations, which, among other things, lead to positing very abstract forms and structures far removed from the observed ones. It is, however, not true that metatheory and method always lead to abstracted data and abstract analysis. Different metatheoretical assumptions and methodological considerations

have led to extension of data (with abstract analysis) as in genera-
tive semantics and concrete analysis (with the same abstracted
data) as in natural phonology.

In spite of the criticism on empirical grounds, the generative
linguistics has enlarged the data base. It includes unobserved
data as it uses ungrammatical sentences which are never uttered
as evidence to motivate a particular analysis. It also uses native
speaker's intuition on grammaticality, grammatical relations, sen-
tence relations etc. as part of data. But, unfortunately, the
ungrammatical sentences and native speaker intuition are not
invariant. Though there is a sizable body of data where the agree-
ment is universal, there are sentences which are grammatical for
some and not for others; there are sentences which are
ambiguous for some and not for others etc. And this happens
sometimes to crucial sentences in the core data (Labov 1975).
This is a serious empirical problem to a theory of ideal speaker's
competence or *langue*. The linguist is forced to rely upon his own
judgement, if he is analysing his language or his informant's
judgement, if he is analysing another language. Alternatively, he
may resort to the formal criterion and accept the data which does
not violate any optimal rule. Both options are not good from the
empirical point of view.

Language is simultaneously a formal object, communication
instrument, cognitive system and social symbol. The best theory
would be the one which combines all these aspects into an
integrated whole. But the data would be too diverse and unwieldy
to formalize. Therefore, the debate goes on for preference bet-
ween precision in theory and coverage of data*.

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NASALS AND NASALIZATION IN KONKANI

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NAZALS IN KONKANI. Konkani has seven nasal consonants at the phonetic level [m], [n],[ɳ], [ɲ], [ŋ], [mh] and [nh]. Out of these [m], [n] and [ɳ] are phonemic since their occurrence is unpredictable. [mh] and [nh] are treated as cluster units, along with other aspirates, at the UR (Underlying Representation) (Misra 1984). The other two [ɲ] and [ŋ] occur in predictable environment, i.e., [ɲ] before a homorganic oral-consonant other than the glides *y* and *w* and [ŋ] before a homorganic oral consonant and word finally.

It is interesting to observe how these nasal segments have been analysed by the earlier scholars. Katre (1966) has given [n], [ɳ], and [m] as the three nasal consonants occurring in Konkani whereas, while describing the consonants of Konkani he gives [ŋ], [ɳ], [n] and [m] as four nasals. Ghatage (1963, 1968) in his studies conducted under a survey of Marathi dialects describing different dialects of Konkani gives [m], [n], [ɳ], [ŋ], [mh] and [nh] as the nasal consonant phonemes. Katre leaves out [ɲ] and aspirated nasals [mh] and [nh] from his inventory of Konkani sounds, and does not take into consideration for the description of Konkani phonology. Ghatage on the other hand takes up /m/, /n/, /ɳ/ and /ŋ/ as phonemic and [ɲ] as an allophone of /n/ which he suggests occurs before palatal consonants (for delails see Ghatage 1968).

For other dialects also he treats the sounds similarly. Neither he nor Katre have dealt with the presence of homorganic nasals in any detail and both are silent on the issue of a nasal archisegment which is a possible explanation for the occurrence of all the nasal consonants before a homorganic oral consonant.

Before coming to the topic of nasal archisegment and its relevance for Konkani phonology, it is pertinent to look at the distribution of different nasal segments.   They occur in the following positions:

1) Word initially followed by a vowel as in [mõti] 'pearl', [mã ʈəv] 'canopy', [nãc] 'dance'.

2) Word finally preceded by a vowel [kãm] 'work', [kãn] 'ear', [təɳ] 'grass'.

3) Word medially between two vowels (intervocalic) [rãnəy] 'fire place' [səmãr] 'monday' [khãɳɛ] 'eatables'.

4) As a member of a consonant cluster

    a) With a nasal or liquid. For example [cimnī] 'sparrow', [komro] 'cock'.

    b) With a non-homorganic stop as C_1 (at the phonetic level only).   Example [himʈi] 'to cry', [ranpī] 'cook'.

    c) With a homorganic stop as C_1. Example [ranti] 'wild' [pəŋkɔ] 'fan' [taɦce] 'to them'.

Number 1-3 are not very important for the discussion here, as these nasal segments are phonemic in nature (Misra 1984). 4 (a) is also not relevant here and thus is left out of the discussion. The focus of interest are 4 (b) and 4 (c). It is mentioned above that 4 (b) occurs only at the phonetic level, in other words, 4 (b) is not present at UR. Notice the data given below:

SET   (A)

[camkil]	'wart'
[lɔnce]*	'pickles'
[pəndɔ]*	'great grand father'
[ãŋtõ]	'toe'
[cimʈõ]	'tongs'

* Vowels (ɔ) and (ɛ) are invariably long in Konkani.

SET (B)

/caməkḭl/	'wart'
/lɔnəcɛ/	'pickles'
/pənədzɔ/	'great grand father'
/aŋᵊtʰõ/	'toe'
əcim/ətõ/	'tongs'

Such items as in Set (A) have a frequent occurrence and show the non-homorganic occurrence of a nasal consonant before an oral consonant. Since it is claimed that the occurrence is only at the surface (4(b)) an explanation is needed. To account for these surface forms an abstract vowel [ə] at the UR of certain lexical items is not specific to Konkani amongst Indo-Aryan languages. Ohala (1972) conducted certain tests to find out the psychological reality of the native speakers of Hindi with reference to an abstract [ə]. She got very positive results which showed a rule-governing pattern. Moreover, Konkani syllabic pattern (Misra 1984) also shows that the language does have a tendency of deleting a vowel if a long vowel is inserted after the following consonant. All the items in Set A show a final long vowel. Therefore, an abstract [ə] can safely be posited in these instances which consequently is deleted when followed by a long vowel across a consonant. A rule stating this may be formulated as follows:

$$V \rightarrow \theta \,/ \quad - \quad C \quad (+) \quad V$$
$$[+back] \qquad\qquad [+long]$$

The UR for Set (A) would be Set (B).

The application of VDR (vowel deletion rule) to the URs of the items under Set B would delete the vowel [ə] between the nasal and the oral consonants, yielding the non-homorganic nasal forms of Set A. This lends support to the claim that the 4 (b) type of constructions where a nasal is followed by a non-homorganic consonant occur on surface alone, and do not exist at the systematic phonemic level.

4 (c) on the other hand states, that very often a nasal consonant occurs before a homorganic oral consonant. To account for

such cases it is suggested here that an abstract archisegmant /N/be posited.

The archisegment nasal is a relevant phonological characteristic for Indo-Aryan languages. Traditionally, it is written with a dot (.) mark over the preceding vowel symbol and is called as *'anuswara chinha'*. This symbol is interpreted in two ways — one, before the application of MS (Morphme Structure) or P (Phonological) rules i.e., as the archisegment value of the nasal; hence as [+consonantal +nasal] ; the other, after gaining the full specification of the features for the point of articulation conditioned by the articulatory features of the following consonant. It is for this reason that traditional grammarians call *'anuswara'* as a 'conditional' sound. The *anuswara* sign (.) and its value has to be differentiated from *'Anunasika'* (.) which stands for a nasal vowel. Srivastava has done extensive research in this field (1969, 1970, 1972, 1976, 1980). Some other scholars who have contributed to this field are Pandit (1957) and Cardona (1965) for Gujarati, Narang and Beckar (1971), Ohala (1972, 1974) for Hindi and Kalra (1982) for Punjabi.

Srivastava (1970) suggested that the generalization about homorganic nasals be incorporated in a P-rule. This rule states that /N/ is realised as homorganic nasal at the redundancy free version of systematic phonemic level, i.e., at lexical representation level. Since these homorganic nasals occur both within and across morpheme boundaries, Srivastava futher suggests that the same P-rule can function both as a MS rule (within morpheme) and as a P-rule (across morpheme boundary). This archisegment can also be realised as a nasalized vowel but only after the application of a P-rule.

Pandit (1957) and Cardona (1965) within taxonomic approach, accept three nasal consonants as phonemes /m/, /n/, /ṇ/ and an archisegment /N/ as the fourth phoneme for Gujarati. The variants of this /N/ are :
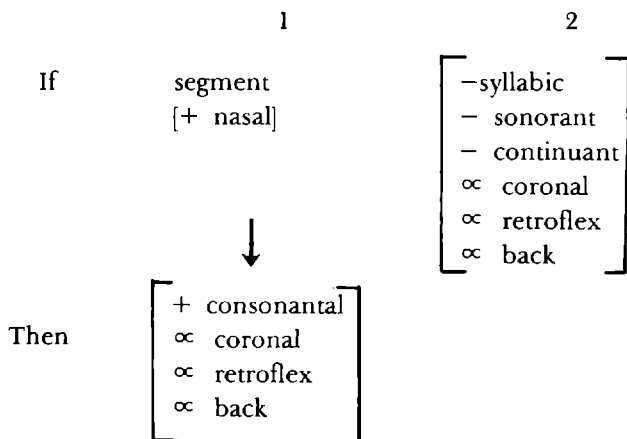
> [ŋ]   —   velar nasal, occuring after [ə] and before a velar stop.

> [ɲ]   —   occurring before a palatal consonant and

[∿]   —   nasalization of a previous vowel, vocalic
                sequence   or   tautosyllabic   sequence   of
                vowel + semivowel.

Their treatment shows that though they accept the presence of an
archisegment /N/, it does not cover [m], [n] and [ɳ] as its variants,
so they do not take the presence of these segments before a
homorganic consonant as different from the phoneme /m/, /n/,
and /ɳ/.

    Therefore, the concept of a nasal archisegment to account
for homorganic nasals is not new and can be introduced for Kon-
kani as well. To deal with the problem, a MS Rule is formulated
which attributes the relevant features to the archisegment /N/
before a homorganic oral consonant The surface realization of
this segment in the form of [m], [n] and [ɳ] is different from the
phonemes /m/, /n/ and /ɳ/.

MSR for homorganic nasals (MSR–HN) :

                        1   2

    If   segment   ⎡ −syllabic   ⎤
                 [+ nasal]   ⎢ − sonorant   ⎥
                                      ⎢ − continuant ⎥
                                      ⎢ ∝ coronal   ⎥
                          ↓   ⎢ ∝ retroflex   ⎥
                                      ⎣ ∝ back   ⎦

                 ⎡ + consonantal ⎤
    Then   ⎢ ∝ coronal   ⎥
                 ⎢ ∝ retroflex   ⎥
                 ⎢ ∝ back   ⎥
                 ⎣   ⎦

This sequential constraint states that the archisegment /N/ is
realized as homorganic to the following non-nasal consonants
thus taking care of all the homorganic nasals occurring in the
language and taking them to be derived from the same nasal
archisegment /N/ at the deeper level. This archisegment /N/ is
also realized as nasalization of the preceding vowel.   This

point is discussed elsewhere under nasalization, where a P-rule is given to account for the deletion of /N/ with a resultant nasalization of the preceding vowel.

However, before ending the discussion it would be interesting to present the following data:

(i)	[āη]	'body'			
(ii)	[sāη]	'to say'			
(iii)	[āηto]	'toe'			
(iv)	[sāηta]	'he saya'			
(v) (a)	[suηgət]	'fish'	(b)	[suηtā]	'fishes'
(vi) (a)	[baηgɔr]	'gold'	(b)	[bhaηrā]	'of gold'

We notice here that the segment [η] occurs both with a homorganic consonant and without it. In forms (i) to (iv) [η] is occurring either in final position or followed by a non-homorganic consonant. Both of these occurrences point towards it having a possibility of being phonemic. However, items (v) and (vi) show the same morpheme in variant forms with and without a [g]. The latter cases explain the presence of [η] before a non-homorganic consonant. In these cases the UR has an oral consonant [g]. One can in these cases, safely assume that the nasal segment here is the archisegment /N/ which is realised as a velar nasal because of the following velar consonant. The velar consonant is later deleted under certain environments (Misra, 1984) leaving the forms (i) to (vi). Thus the UR for items (v) and (vi) would be

| (v) (a) | /suNgət/ | (b) | /suNgðt+ā/ |
| (vi) (a) | /bhaNgɔr/ | (b) | /bhaNgɔr + ā/ |

The MS rule –HN would give us the forms
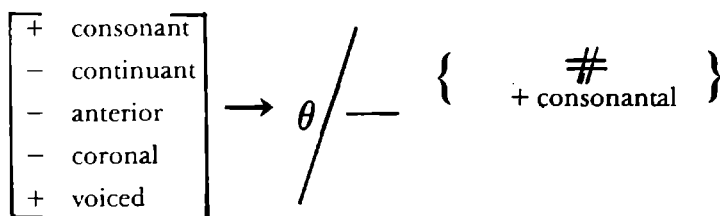
| /suηgət/ | /suηgəi + ə/ |
| /bhaηgɔr/ | /bhaηgɔrā/ |

The ə – deletion rule would delete the /ə/ in the plural forms yielding the following forms

[suŋgṭā]

[bhaŋgra]

At this stage we posit a P–rule which would delete [g] when preceded by [ŋ] and followed either by a consonant or a word boundary.   This rule would be:

g — deletion rule:

$$
\begin{bmatrix}
+ & \text{consonant} \\
- & \text{continuant} \\
- & \text{anterior} \\
- & \text{coronal} \\
+ & \text{voiced}
\end{bmatrix}
\rightarrow \theta \Big/ \underline{\hspace{1cm}} \left\{ \quad \begin{matrix} \# \\ + \text{consonantal} \end{matrix} \right\}
$$

This rule would give us the right surface forms for (i) to (iv) and (v)b and (vi)b. in case of (v)a and (vi) the rule does not apply and we get the right surface forms.

[g] deletion

(i)	/āŋg/	→	[āŋ]	'body'
(ii)	/saŋg/	→	[saŋ]	'to say'
(iii)	/aŋgṭo/	→	[aŋṭo]	'toe'
(iv)	/saŋ+ṭa/	→	[saŋṭa]	'he says'
(v)a	/suŋg∂ṭ/	→	[suŋg∂ṭ]	'fish'

      ∂–deletion   [g] deletion

(v)b /suŋg∂ṭ+ā/ → [suŋgṭā] → [suŋṭā]

     [g]   deletion

(vi)a /bʰaŋgɔr/ → [bhaŋɔr]

     ∂–deletion   [g] deletion

(vi)b /baŋgɔr+a/ → [bhaŋgra] → [bhaŋrā]

Thus segment [ŋ] is a realization of archisegment /N/ and is not phonemic.

From the above discussion one can, therefore, conclude that Konkani has four phonemic nasal segments which are /m/, /n/, /n̪/

and /N/. /N/ has different consonantal surface realizations which are [m], [n], [ɳ], [ɲ] and [ɦ].

Apart from the different nasal consonantal segments, languages also have vowels that have nasality. It would be interesting to see what happens in Konkani so far as nasalized vowels are concerned. But before entering into a discussion of these it would be pertinent to explore the concepts of 'nasal vowels' and 'nasalized vowels' existing in modern phonology.

Ruhlen (1978) categorises nasal vowels under three definitions. First definition clarifies that any vowel pronounced with a lowered velum is nasalized. He terms such vowels as phonetic nasal vowels. The degree of nasalization here can be more or less, depending on various factors. His next two definitions differentiate between a phonemic and a phonological nasal vowel. The one unpredictable from their phonetic environment and thus present at the systematic phonemic level are phonemic, and the other derived through certain phonological processes and arrived at only on the surface level, i.e., at the systematic phonetic level, are phonological. To discriminate between the latter two types of nasal vowels he coined the two terms

Nasal vowels	and	Nasalized vowels
Inherent nasality, Present at systematic Phonemic level		Nasality derived due to a nasal context, occur only at systematic phonetic level

NASALIZATION PROCESS. A number of processes or phonetic environment may lead to nasality of a vowel in a given language:

1. NASALIZATION OF VOWELS DUE TO PHONETIC PROCESS. A vowel is nasalized when it is preceded or followed by a nasal or both. In Konkani one comes across forms such as:

   [pã̃n]   'leaf   [n ∂n∂d]   'sister-in-law'

[nãc]   'dance'
[ghãm]   'sweat'
[tãṇ]   'grass'

The degree of nasalization here is very less and this also differs in different contexts. Kelkar (1961) with reference to Hindi stated that a nasal preceding the oral vowel is less influential in affecting the nasalization of the vowel than a nasal following. Thus he claims that the nasalization is stronger in [kã⁺n] 'ear' than in [nãk] 'nose'. In Konkani also the vowel in [pãn] 'leaf' is more nasalized than the one in [nãc] 'dance' above. Ohala (1971) also found out through instrumental means that greater nasalization of a vowel occurs *before* rather than *after* a nasal consonant. However, the degree of nasalization of a vowel in phonetic context is not of much importance for the discussion here. One does not come across any minimal pairs in Konkani which would show the contrast in the degree of nasalization. The general P–Rule to explain this phenomenon is:

NR (i)   V ⟶ [+nasal] / [+ nasal]

The rule here states that any vowel that is in the vicinity of a nasal consonant is nasalized.

2.   NASALIZATION OF A VOWEL DUE TO MORPHOLOGICAL OR SYNTACTIC PROCESS.

Observe the following data from Konkani

[dātāk]   'to the tooth'   [dātãk]   'to the teeth'
[nh∂yik]   'to the river'   [nh∂yĩk]   'in the river'
[ghoḍyā]   'horse oblique'   [ghoḍyã]   'horse ablative'

The plurality of the noun here is a grammatically determined fact realised in the form of nasalized vowel on the surface level. The nasalization of the vowel here is derived from an underlying morpheme /N/. Therefore, nasalization in these instances is also not phonemic since it is gramatically predictable.

3.   THE NASALIZATION OF VOWELS DUE TO PHONOLOGICAL PROCESSES. In this instance a nasal vowel is derived by its environ-

ment. Languages frequently exhibit regressive vowel nasalization.
Languages also frequently loose word and syllable final nasal
consonants resulting into the nasalization of the preceding vowel.
Nasal consonants are also, in certain cases, lost intervocalically
resulting in the nasalization of the surrounding vowels.   It is
accepted here that nasalized vowels are derived vowels.   It is
believed that certain environments are more conducive to nasal
consonant loss resulting in the development of distinctive nasal
vowels.   The environment of nasalization can be hierarchically
arranged.   Some of the parameters commonly associated with
nasalization are :

1) Nasal consonants can be followed by different classes of
   consonants having different effects on vowel nasalization. It
   is commonly held that nasalization occurs earlier when the
   following consonant is a continuant than when it is a stop.
   It is also said to occur earlier before vioceless obstruents
   than before voiced ones.

2) Chen (1971) believes that the point of articulation of the
   nasal consonant itself influences nasalization.   He claims
   that labials nasalize vowels earlier than dentals and that den-
   tals nasalize vowels earlier than velars.   Thus |am| would
   develop a nasal vowel earlier than |an| would.

3) The quality of the vowel itself is also thought to influence
   the order of nasalization.   It is usually claimed that low
   vowels nasalize earlier than higher ones.   Chen (1971) also
   claims that front vowels nasalize before back ones do.
   Schrourup (1973) claims that stressed vowels nasalize before
   unstressed do.

NASALIZATION IN KONKANI.   Historically, nasalized vowels
of Konkani are derived from the nasal consonants in the proto-
forms. As mentioned earlier, Katre (1966) has given evidence to
show that historically nasalized vowels of Konkani are derived
from nasal consonants of OIA (Old Indo-Aryan) and MIA (Mid-
dle Indo-Aryan).   He states about nasalization, 'in general when
nasals occupy the final position in a word, we have nasalization'
(Katre 1966, 38).   Some of the examples from Katre's work are

quoted here:

Sanskrit	Konkani	Gloss
′satam	′sẽ	'hundred'
′sī tam	′sĩ	'cold'

and dimunitives like

rupam   −rũ

He further points out, 'if a nasal is preferred in the preceding syllable, nasalization of the final vowel of Konkani does not take place usually: thus [pani], [loni] or [noni], (katre 1966, 38). Thus nasalization of a vowel according to Katre occurs due to the nasal loss. Within a word he treats the combination vowel + nasal + consonant in the following way:

i) Short vowel + nasal + unvoiced consonant (katre 1966,
                                    voiced   39, 40)
    Ex. [limbyo],   [vaṇṭi],   [candru],   [kaṇḍi]

ii) Long nasal vowel + unvoiced consonant (Katre 1966, 39)
    Ex. [cãpẽ], [ãk].

iii) Long nasal vowel + nasal + voiced consonant   (Katre   1966,
     40)
     Ex. [ãŋgon],   [ãŋgi]

The three statements made by Katre present an interesting picture of NVs in Konkani before us. A look at these statements show that whenever a nasal consonant is preceded by a short vowel the voicing of the following oral consonant is immaterial i.e., in such cases the nasal consonant is not dropped, neither is the preceding vowel nasalized as a result. The phonetic realization in this case is VNC. On the other hand, for the second and third situation he states, 'when the vowel is lengthened it becomes an *anunasika* with the loss of the following nasal only when it precedes an unvoiced consonant.' (Katre 1966, 40). The whole of Katre's discussion points towards the presence of a nasal consonant at the root of an NV. Since Katre's is a historical study he gives a diachronic development of Konkani NVs from OIA.

Though one cannot completely fall back on the historical aspect of a language to decide facts in the generative framework still historical processes at times reveal certain important aspects about a language from which one can draw help in deciding the URs of the present day forms. The comparative study of Sanskrit and Konkani by Katre, therefore, throws some light on the NVs of Konkani. Katre's analysis can be represented in TGP (Transformational Generative Phonology) in the following manner:

The development of [VNC] and [Ṽ] from an earlier form [VNC] is a natural phonological process and is not specific to Konkani. In fact it is quite general and exists in many of the modern Indo-Aryan languages — as a result of historical development originating from Sanskrit. Under TGP we can give the following rule to account for this change.

NR (iia)	SD :	V	N	C
				[−voice]
	SI :	1	2	3 =>
	SC :	$\begin{bmatrix} +\text{long} \\ +\text{nasal} \end{bmatrix}$	θ	3

A nasal consonant is dropped when followed by a voiceless consonant resulting into the nasalization and lengthening of the preceding vowel. /N/ here represents all nasal segments. Exmples (i) and (ii) given by Katre do not pose much problem. In the first instance an oral vowel is followed by a nasal consonant. The vowel in this instance is not noticeably nasalized. Nonetheless, it should be mentioned that a slight degree of nasalization does occur here as per our rule NR(i) stated earlier, though Katre treats them as oral vowels and such cases are treated as oral vowels by others as well. But according to Ruhlen's definition they are nasal vowels as opposed to the nasalized vowels. NR (ii) accounts for the second type of situations given by Katre, where a long nasalized vowel is realized after the deletion of archisegment /N/. The following consonant is voiceless.

For the third category Katre states that a nasal consonant when followed by a voiced oral consonant can be preceded by a long nasalized vowel i.e., though the vowel here is nasalized and is also long the nasal consonant is not dropped since the following oral consonant is voiced. One possible analysis for the third set could be that NR (iia) is revised as NR (iib) and is applied on Sanskrit forms yielding $\tilde{\tilde{V}}$ C < VNC, next a detailed phonetic rule applies which inserts a nasal consonant between the nasalized vowel and the consonant. In fact there is a natural process where a nasalized vowel preceding a voiced consonant nasalizes the following consonant, therefore:

	VNC [+voiced]	→	$\tilde{\tilde{V}}$ C [+voiced]	→	$\tilde{\tilde{V}}$ NC [+voiced]
NR (iib) SD :		[+syllabic]	[+nasal]		$\left\{\begin{array}{c} \# \\ C \end{array}\right\}$
SI :	1		2		3
SG :	$\left[\begin{array}{c} +\text{nasal} \\ +\text{long} \end{array}\right]$		θ		3

Here voicing of the following consonant is immaterial. The detailed P–Rule (N insertion) in this case would be

$$\tilde{\tilde{V}} \quad \theta \qquad C \quad \longrightarrow \qquad \tilde{\tilde{V}} \qquad N \qquad C$$
$$[+ \text{ voiced}]$$

Condition : N is always homorganic to the following consonant and the following C is [+ vcd.]

Thus, Konkani [$\tilde{a}\eta$ga] is derived from Sanskrit [aηga] in the following way:

```
Skt.          aŋga
                ↓          NR (ii)
              ã
                ↓          Detailed Phonetic Rule (N-insertion)
Konkani       ãŋga
```

An alternative analysis, for the synchronic data, i.e., without referring back to the Sanskrit forms of these items, is possible by

positing an underlying form with a long oral vowel, followed by a nasal consonant which in turn is followed by a voiced oral conso- nant, i.e., /VNC/. This will simplify the matters and the applica- tion of MS Rule for homorganic nasals to this dictionary representation would yield the homorganic nasal consonant. The general rule of vowel nasalization in the presence of a nasal con- sonant would yield the right result without the necessity of the Detailed Phonetic Rule (N. insertion).   For example:

/āNga/	→	āŋga	→	ã̄ŋga
VNCV	MSR-HN		NR (i)	

   To come back to the main issue of vowel nasalization, we observe, therefore, from Katre's analysis of his data that Katre treats the nasalization of vowels as an influence of a nasal conso- nant in the environment.   However, according to him the nasalization also depends on the voicing quality of the oral conso- nant across the nasals. Ghatage (1963, 1968), on the other hand, in his study of the nasalized vowels of Konkani in two dialects treats them differently.   In one dialect (Konkani of South Kanara), without making any definite claims, he describes the occurrence of long nasalized vowels followed by a stop 'a homorganic nasal is found to occur in between, freely varying with zero' (Ghatage 1963, 6).   A similar variation is also found in a situation like CVGNCV (G here stands for a glide).   For example:

	(i)				(ii)
(A)	/bãdi/	'tie'	[bãndi]	~	[bãdi]
	/kãt̪hu/	'coast'	[kãnt̪hu]	~	[kãt̪hu]
	/gãti/	'joint'	[gãṇti]	~	[gãti]
	/sãgə/	'beans'	[sãŋgə]	~	[sãgə]
	/lã̄bə/	'long'	[lã̄mbə]	~	[lã̄bə]

(B)	/ã̂vagalἔ/	'cloth'	/ã̂vagalἔ/
	/ə̃̂yši/	'eighty'	[ə̃̂yši]
	/t̃i/	'they (N)'	[t̃i]
	/phallἔ̃/	'dawn'	[phallἔ̃]
	/səkã̄li/	'morning'	[səkã̄li]
	/hἔ̃vsə/	'swan'	[hἔ̃vsə]

It is evident from the data given above that Ghatage for this dialect treats: •

1) Nasalized vowels to be phonemic.

2) The homorganic nasal consonant as a derived consonant from the underliying nasal vowel.

He provides some further data to show the contrast between nasal and non-nasal vowels:

| [pittā] | 'he drinks' | [pittā̃] | 'I drink' |
| [rundi] | 'breath' | [rū̃di] | 'broad' |

The presence of [pittā] and [pittā̃] with different meaning is evidence enough to take them as minimal pairs thus establishing the twin segments [ā] and [ā̃] as phonemes /ā/ and /ā̃/.

While describing the Kankon dialect of Konkani Ghatage (1968) makes a definite claim of nasalized vowels being phonemic, 'It has to be set up as a suprasegmental phoneme for this dialect' (Ghatage 1968, 2). In support of his claim here also he provides some contrastive data. (See Ghatage for details). Therefore, according to Ghatage nasalized vowels in Konkani are phonemic. His claim, however, is contradicted here and it is claimed that nasalized vowels in Konkani are a result of a phonological process referred to as Nasalization earlier.

Ghatage has failed to explain the presence of two variant phonetic forms of the same lexical item.

i) with a nasalized vowel and

ii) with an oral vowel followed by a nasal, homorganic with the following consonant.

Ghatage's analysis fails to capture the fact that both variant forms have one underlying form. Moreover, the contrast shown by Ghatage is more surface contrast, and therefore, in generative approach, not a strong argument. In our model this problem of variation can be resolved by posing an archisegment /N/ in the UR of these variant forms. Therefore, the phonemic forms of these items would be

(C) /baNdi/
     /kaNṭhu/
     /gaNṭi/
     /laNbə/

MS Rule for homorganic nasals given earlier states that the seg-
ment /N/ is realised as homorganic to the following stop conso-
nant. MSR–HN would give us the following forms given under
(ii) above. The vowels preceding the nasal consonant would get
nasalized by the NR (i).

(D) [bãndi]
     [kãnṭhu]
     [gãnṭi]
     [lã mbə]*

* Nasalization of the vowels here is not marked.

Application of NR (ii) to the set of words under (C) would
yield the variant surface realizations given under A ii earlier.
Some more data in support of V + N analysis is provided
here.

[rətˤↄ̃]	~ [rətˤↄn]	'invent'
[sãjhver] 'evening'	~ [sə jhākāḷe]	'in the evening'
[bhũkṛe]	~ [bhuŋkcɛ]	'to bark'
[sãkhḷi]	~ [sāŋkə̆ḷ]	'chain'
[kãpta]	~ [kamptā]	'trembles'

Presence of these variant forms suggests that the UR of these
forms should be with V + N rather than the other way round as
treated by Ghatage. Since nasalization of a vowel in the vicinity of
a nasal is much more natural a phenomenon than inserting a
nasal consonant without any justification.

In the data provided above all the VC items have a variant
VNC. From such data it is easier to arrive at the solution sugges-
ted above, i.e., to posit an archisegment /N/. However one also
comes across lexical items such as:

[khↄrɛ̃̇]	'spade'
[hãˇv]	'I'
[hãslo]	'laughed'
[kutõ]	'what'
[thə̃y]	'there'
[khə̃y]	'where'
[khoṭɛ]	'lie'

All the items given above have a nasalized vowel but there is no evidence at the surface level to suggest that there is a nasal segment involved in the nasalization here. It is suggested here that the archisegment /N/ be posited at UR here as well. Th data given here and the data quoted from Ghatage earlier has one thing in common. In all these cases the nasal vowel is either in the final position or followed by a glide, a liquid or fricative, i.e., never an obstruent. This leads us to believe that an archisegment /N/ is at the UR of all these items which is dropped obligatorily when followed by a word boundary or a liquid, glide or fricative and optional when followed by an obstruent. In the former case it is realized as nasalization of the preceding vowel, while in the latter case it is either realized as a homorganic nasal to the following consonant or as nasalization of the preceding vowel.

To capture the two realizations of /N/ given above NR (iib) needs to be revised and rewritten as follows:

$$
\begin{array}{ccccc}
1 & 2 & 3 & 1 & 2 \\
\end{array}
$$

NR (iii)   [+ syllabic]   [+ nasal] $\left\{ \begin{matrix} \# \\ C \end{matrix} \right\} \Rightarrow \left[\begin{matrix} +\text{nasal} \\ +\text{long} \end{matrix} \right]$ θ   3

Conditions: 1.   2 is always /N/

2.   the rule is obligatory when /N/ is followed by [+cont.] and optional when followed by [−cont.].

Some more data from Konkani is cited here.

(i)   (ii)

[kãp]	'to cut'	[kãp]	'piece'
[bhũk]	'to hunger'	[bhũk]	'to bark'
[wãṭ]	'grind'	[wãṭ]	'to distribute'

Minimal pairs of the type given above suggest that there is a possibility of vowels being nasalized at the UR as the oral and nasal vowels are in contrast. It should, however, be pointed out here that the constrast is purely at the surface level.

The UR of the words under (ii) above in our analysis would be: /kaNp/, /bhuNk/, /waNṭ/. The oral and nasal vowels would really be in contrast if one can find examples showing the contrast in nasal environment i.e., contrast in position such as VC : VNC. However, this kind of data was not found in Konkani.

The nasalization in [pittã] and [pittã] like cases given by Ghatage is also predictable. True, looking at their phonetic environment one cannot do so but grammatically they are predictable and they are results of two different morphemes. Their derivation in the following way seems to be more natural and provides a better explanation:

/+pi+/ 'to drink'   /+tã+/ present tense marker'

/+θ+/ 'III person Sg. morpheme' /+N+/ 1 person Sg.

(i) /pi + tã + θ /   [pitã]

Konkani has a general gemination rule (Misra 1984) that reduplicates the first consonant of the second morpheme if the preceding morpheme, which is a verb stem, ends in a vowel. The gemination rule, therefore, changes

　　　[pitã]   →   [pittã]

(ii) / πι + ta +   N / =   pitaN
　　　　　　　　　　　　↓   V. Nasalization NR (iii)
　　　　　　　　　　　　pitã
　　　　　　　　　　　　↓   Gemination
　　　　　　　　　　　　pittã

The second evidence given by Ghatage from Kankon dialect can also be explained in the same way.   For example

[dātāk] 'to the tooth' [dā̃tã̄k] 'to the teeth'

The derivation of the two forms given here under TGP model would be:

/dātə/ 'tooth' /āk/ 'dative' /N/ 'pl. morpheme'

(i) Singular form
    /dātə̃ + ak/
          ↓   Vowel Sandhi Rule
    [dātāk]
(ii) Plural form
    /dātə + N + ak
           ↓   Nasalization Rule NR (iii)
    [dātə̃̃ + ak]   Vowel Sandhi Rule
    [dātã̄k]

Vowel Sandhi Rule

1	2		1	2
V	V	→	[+ long]	θ

Nasalization in these cases, therefore, is predictable and derived and not phonemic as claimed by Ghatage. This kind of data comes under N (ii) given earlier in this section where grammatically predictable nasalization is discussed.

CONCLUSION. Thus it is concluded here that nasal vowels in Konkani are all derived vowels and do not exist in the lexicon.

The nasalization in Konkani is a process which transforms certain oral vowels at the UR to the *nasalized vowels* at the SR (Surface representation).   The segment that causes this nasalization is the arechisegment /N/ which has different surface realizations.

  i) nasalization of the preceding vowel at the loss of the following /N/ the vowel is also lengthened in the process when

followed by a consonant

ii) nasalization of the vowel in word final position and the loss of the following nasal segment except in monosyllabic words such as [ãƞ] 'body' [sãƞ] 'to say' etc. The nasalization is gradually becoming more general in the language. The Sanskrit borrowings have a homorganic nasal which becomes a nasalized vowel in the native form, for example, [kāmptā] 'tremble' and [kāptā]. However, there are two variant forms of a word, none of them being a Sanskrit 'tatsam'. To account for such cases one can say that one form is completely nativized and the other is on its way, for example, [sãjhver] ∿ [sa ɉhākālē] 'evening'. There are also items where the variant forms are completely lost.

Thus, in other words one can conclude that both homorganic nasals and the nasalized vowels of Konkani are the same archisegment /N/ at the UR with different semantic values for each of its occurrences at the UR. Besides the archisegment /N/, there are three other nasal segments /m/, /n/, /ṇ/, present at the systematic phonemic level of Konkani phonology. Thus Konkani has two different [m]'s, [n]'s and [ṇ]'s at the systematics phonetic level ;

(i) surface realizations, in consonantal form, of the archisegment /N/ and (ii) the phonemic /m/, /n/, and /ṇ/.

Therefore, Konkani has four nasal segments in all /m/, /n/, /ṇ/ and /N/. There are no underlying nasal vowels in Konkani and all the vowels with nasality on the surface are a result of the nasalization process which nasalizes a vowel in the vicinity of /N/, deleting /N/.

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GERUNDS AND GERUNDIVES IN BANGLA: THE CASE OF *wa/no* AND *ba* SUFFIXES

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INTRODUCTION. In Bangla gerund words are very productively formed by adding one of the two morphological markers, viz. *wa/ no* and *ba*[1] (irrespective of their phonological variations). to any regular verb root   For example,

1. with *Wa/no*

    (a) *dEkh-a* 'see-ing' as in *dEkhar moto* 'worth seeing'
          seeing- Gen like

    (b) *kha-Wa* 'eat-ing' as in *khaWa holo* 'eating is over'
          eating happened

    (c) *naRa-no* 'mov- ing' as in *naRanor bhoNgi* 'style of moving'
          moving- Gen style

2. with *ba*

    aS-ba 'com- ing' as in *aSbar SomOy* 'while coming'
    coming- Gen time

    Observations show that Bangla gerundive[2] constructions also use these *wa/no* and *ba* suffixes, between which *ba* is more frequent than the other.   For example,

3. with *wa/no*

    (a) *bOS-a-r ghOr* 'drawing room'
          sitt- ing- Gen room

(b) *cor ThENa-no-r laThi* 'a stick to beat thieves with'
     thief beat-ing-Gen stick

4. with *ba*

   So-ba-r ghOr 'bed room'
   sleep-ing-Gen room

2. THE PROBLEM. Section 1 shows that in Bangla the morphological markers *wa/no* and *ba,* with special reference to *ba* (as it is more frequent than *wa/no*), are shared by both gerunds as well as gerundive constructions. Bangla gerundives mostly have the form [V-*ba*-Gen N][3]. Thus they show structural similarity with the [Gerund-Gen-N] constructions and result in confusion. In the present paper the problem is precisely, how do we differentiate between Banlgla gerund and gerundive constructions where both of them share a similar form, viz. [V-*ba*-Gen N].

   Section 3 will show the histotical treatment of the Bangla gerund and gerundive suffixes. Section 4.1 and section 4.2.0 will take care of the responsibility of differentiating between these gerund and gerundive constructions of Bangla in terms of syntax and semantics (both of which come under a generative treatment, i.e. section 4,) respectively.

3. THE HISTORICAL TREATMENT

3.1 GERUNDS. Chatterji (1926) mentions the forms presented in section 1 as 1 (a,c) and 2, viz. *a no* and *ba,* as gerund suffixes[4] and shows their diachronic developments as follows[5]:

(1a) a: : OIA *ta, -ita* (pass. part.) > MIA *-a, ia* + pleonastic/
           definitive *-a:,* e.g. *ya: ta* > *ja: a + a* OB.
           *ja: a:, NB. *jawa* 'gone > going'.

This suffix, throughout its history serves as the participle suffix but at the NIA stage (e.g. in Bangla) its use has been extended so that it now serves as a gerund siffix too, e.g.

           Bangla : *jaWa* 'going', Assamese : *jowa* 'going', Oriya :
           de : kha : 'seeing' etc.

In the MB stage *a :* forms are less frequent in comparison with other gerund suffixes.

Though Chatterji does not explicitly mention *wa*, from his description it follows that *wa* is a phonological variant of *a :*.

(1c) According to Chatterji *no* is the result of a merger of two different suffixes, viz.

> i) *a:n, -a:na (-a:no)* < OB. *a:n̥ a:ṇawa, a:wạṇawa*
>   (the gerund suffix for causative and denominative roots),

> ii) *-a:na (-a:no)* < OIA *-mana -ka, -y-a:na -ka* (the participle suffix for causative and denominative roots).

> (2) *-iba, -iba :* < MIA *-iabba -a* < OIA *-itavya.* Not only the Magadhan group but also languages like Rajasthani, Gujarati etc. use this *-itavya* affix to form their gerunds, e.g.

>   Assamese : *kOribO* 'doing',   Oriya : *jiba* 'going' and Gujarati : *ma : ravuM* 'beating'.

3.2   GERUNDIVES.   Regarding gerundives Chatterji (1926:1017) notes : The *-ib* verbal noun is used in the genitive to indicate the present or future relative participial idea (while the past participle in *-a:* is used to denote the past relative idea), e.g. : *amar pOrbar kapoR* 'cloth to be worn by me'. Oriya and Bihari dialects also show relative participle adjectives, formed with past and future passive participles, used adjectivally : e.g. Oriya : *mu de : ba: dhana* 'money that is to be given by me' whereas Bangla, since its early stages, shows the genitive use of the verbal noun, rather than mere adjectival juxtaposition, e.g. : *Sobar ghOr* (cf. 4).

4. THE GENERATIVE TREATMENT. There is no publisned work on these constructions in any generative framework. That is why the nature of these gerunds and gerundives is not yet well understood. Here I would like to show one syntactic and two semantic differences between gerunds and gerundives.

4.1 THE SYNTACTIC DIFFERENCE. As Ramarao and Mukherjee observe correctly, for each gerundive there is a corresponding relative clause with the relevant nominal as an object or complement, whereas, for gerunds no such relative clause is available, e.g. gerundives.

5. (a) *Sobar ghOr* 'bed room'
   sleeping-Gen room

   (b) *kolkata jabar Tren* 'The train which goes to Calcutta'
   Calcutta going-Gen train

Relative Clauses

6. (a) *je ghOre SoY Se ghor*
   which room-Loc sleeps that room
   'The room where one sleeps'

   (b) *je Trene kolkata joY Se Tren*
   which train-Loc Calcutta goes that train
   'The train by which one goes to Calcutta'

Gerunds

7. (a) *hat-pa naRanor bhoNgi*
   hand-foot moving-Gen style
   'The style of moving the limbs'

   (b) *kaj baRbar onupat*
   work increasing-Gen ratio
   'The ratio of increase in work'

   Relative Clauses

8. (a) **je bhoNgi hat-pa naRe Se bhoNgi*
   which style hand-foot moves that style
   'The style which one moves limbs'

   (b) **je onupat kaj baRe Se onupat*
   which ratio work increases that ratio
   'The ratio which one increases work'

Syntactically, gerunds also allow one type of *je,* e.g.

9. (a)   *ami je hat-pa naRbo tar bhoNgi*
          I that hand-foot move will that-Gen style
          'The style of my limb movement'

    (b)   *kaj je baRbe tar onupat*
          work that increase-will that-Gen ratio
          'The ratio of the increase in work'

But this *je* of a gerund phrase (i.e. of 9) is different from that of
the gerundives because syntactically they behave quite differently
from each other.   One such behaviour is that the *je* of (6) cannot
float anywhere else in the clause whereas the *je* of (9) can float
around in the clause as is shown in (10) and (11)
respectively:

10. (a)   **ghOre je SoY Se ghOr*
     (b)   **Trene je kolkata jaY Se Tren*

11. (a)   *ami hat-pa naRbo je tar bhoNgi*

     (b)   kaj baRbe je tar onupat

Such behaviour also implies that the *je* of (6) is a part of a node
that hosts the *je* and its following NP whereas that of (9) is a part
of a node that hosts the *je* and a clause as a whole[6].

Thus the syntactic scopes of these two *je* elements are dif-
ferent from, each other. The *je* of (6), i.e. of a relative clause takes
care of only the following N of the NP node, i.e. it specifies only
the following sister N.   In contrast, the *je* of (9) takes care of the
whole clause, i.e., of all its sister nodes. This scope-difference is
relevant   for   the   semantic   interpretation   rules   of   the
grammar.

4.2 THE SEMANTIC DIFFERENCES. The gerundives, as opposed to
gerunds, always carry a habitual sense. Compare 12 (a) and (b).

12. (a) *aSbar uddeSSo* 'the reason for coming'
        coming-Gen reason

    (b) *bOSbar jaYga* 'a place to sit'
        sitting-Gen place

In 12 (a) no habitual sense is conveyed, a fact which testifies to the gerund character of *aSbar*.

The [V+*ba*-Gen] construction of a gerundive has an adjective reading, i.e. it qualifies the following N. The *Sobar* and *kolkata jabar* of 5 (a, b) qualify *ghOr* and *Tren* respectively in the same way as *bORo* and *choTo* do in the following examples.

13. (a) *bORo ghOr* 'big room'
    (b) *choTo Tren* 'small train'

On the other hand the [V-*ba*-Gen] of a gerund merely marks an NP followed by an N, e.g.

14.   *nambar SomOy (bollen)*
       getting-down-Gen time (said)
       'While getting down (he said)'

5 CONCLUSION. Though in Bangla both gerunds and gerundive constructions share the structural form [V-*ba*-Gen N], in terms of the above syntactic and semantic differences it is shown that the gerundives are clearly different from the [Gerund-Gen N] constructions.

NOTES

1. For transcription I follow Ray et. al. (1966) : E is a mid front vowel, 0 is a mid back vowel, unrounded and rounded, respectively. T D R are retroflex, N is velar, S is palatoalveolar. Y W are the mid counterparts of y w. M indicates nasalization of the vowel or diphthong immediately preceding it.

2. The term gerundive may be controversial. Ramarao and Mukherjee (personal communication) prefer to call it phrasal relative constructions. This, to me, indicates an extended use of the term 'relative construction' as Bangla also shows a relative construction with a clause structure. Dasgupta (1980)

has pointed out to me that if the term 'relative construction' is extended along these lines it will have to include any [AP N] structure. This is counterintuitive. Dasgupta (1983) has also shown the difference in the syntactic behaviour of the relative clauses and what I called gerundives in Bangla.

Thus for the following reasons I would like to use the term gerundive for the present paper:

i) The absence of any published literature which might help to remove the confusion regarding the term 'Phrasal relative'. ii) The structural similarity between these and the [Gerund-Gen-N] constructions. iii) The hope of accommodating both the constructions of (ii) within a broader theory. iv) The fact that the terms gerund and gerundive imply some sort of relation or similarity between these two.

3. In the cases of the shared *Wa/no* suffix the form of the gerundives is V-*Wa/ no*-Gen N, which is not so frequent

4. Chatterji (1926) uses the term verbal noun for gerunds.

5. Transcription is according to Chatterji (1926).

6. Dasgupta (1980) differentiates between these two types of *je*. According to him the relative *je* of 6 is the DET (erminer) *je* and is generated by the following rule:

    Dasgupta: 1980:   rule No. III. 15 ;

    NP → (DET) (NUM') N, where N may be empty in some sense. Whereas the *je* of 9 is a COMP (lementizer) *je* of a complement clause and is generated as follows:

    Dasgupta: 1980:   rule No. V-99 :

    S →S COMP

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AN ARTICULATORY AND ACOUSTIC STUDY
OF TRILLS IN MALAYALAM

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¹. INTRODUCTION. This paper is a modest attempt at inter-
preting trills in Malayalam in the light of evidence drawn from
spectrographic, radiographic and palatographic analysis. There
are two trills in Malayalam, represented as /r/ and /ṛ/ both of
which are contrastive in function as may be seen from the con-
trasting pair: *kari* 'charcoal' vs *kaṛi* 'curry'. These trills are
derived from proto-Dravidian /r/ and /ṛ/ respectively.

> r: Ta. ni:r; Ma. ni:r; Ka. ni:r; To. ni:r; Te.
> ni:ru 'water' (DED 3690 (a))

> r̲: Ta. aṛi 'to know; Ma. aṛiyuka,; Ka. aṛi: Tu
> erupu: Te. eṛugu: Kol. erka (DED 314)

Among the Dravidian languages only Malayalam and some
dialects of Sri Lankan Tamil still retain the original contrast bet-
ween /r/ and /ṛ/. According to Ladefoged (1977 : 54) Malayalam
is one among very few languages that has trills at two
places of articulation.

Existing discussions on the Malayalam /r/ and /ṛ/ distinction
are, however, far from being conclusive due to the complexities
involved in the issue. /ṛ/ is usually reconstructed as alveolar
plosive. Tolkappiyam classes it in a series of stops (See Zvelebil
1970 : 95). Ramaswami Aiyer and Krishnamurti, as Zvelebil
(1970) reports, treat it as a voiced plosive. In Malayalam, the
plosive character of /ṛ/ is preserved when it follows a nasal as in
the word *enṛe* 'my'. Zvelebil (*ibid*) opines, "In most Malayalam
dialects and some Ceylonese (or rather Jaffna) Sub-dialects of
Tamil, the Ta-Ma. ṛ i.e., PDr * ṭ is until today an alveolar to
cacuminal two-tap trill". Ramaswami Aiyer states that /ṛ/ is a true

'retroflex sound' and slightly trilled (see Zvelebil 1970).
Krishnamurti (1961) attributes the trilling of PDr. alveolar plosive
as an instance of "the general process of weakening or spirantiza-
tion of intervocalic position, which must have taken place in the
PDr. stage itself for the trill is present in all Dravidian languages".
But Prabodhachandran Nair (1972) calls /r/ and /ṛ/ as flapped
articulations. He distinguishes the former as voiced palatalized
denti-alveolar flapped articulation.   He also concurs that
occasionally /ṛ/may include more than one tap.

According to Ladefoged (1971/74 : 51,52), Malayalam /r/and-
/ṛ/ differ in place of articulation in that, one being more a dental
and the other more an alveolar.   He calls the first, 'advanced
alveolar trill' represented in his notation as /r̠/ and the second,
'retracted alveolar trill'. He further infers, on the strength of spec-
trographic investigation, the probability of distinguishing both by
the action of the back of the tongue.   Velayudhan (1971) argues
for considering /ṛ/ as an alveolar stop having two allophones, one,
a stop and the other, a trill. He claims that this has the advantage
of accounting for the occurrence of voiceless alveolar fortis stop
intervocalically which could be aligned with other long con-
sonants. Later, however, he contradicts his own earlier statement
by saying that Malayalam liquids do not exhibit allophonic
variations.   In a recent working paper, Yamuna (1986) dis-
tinguishes /r/ itself into two on the basis of the number of taps
involved – just one tap or more than one.   This distinction,
however, is unpredictable. Thus, there is a considerable dis-
crepancy in the description of the two trills of Malayalam.

These two trills, /r/ and /ṛ/, can occur in all positions of a
word except in the final position where only /ṛ/ occurs. They may
be (tentatively) described by their place and manner of articula-
tion as follows : While /r/ is an alveolar continuant produced by
the close approximation of the lamina of the tongue against the
alveolar ridge, followed by the central passage of the air-stream, /ṛ
/ is articulated by the intermittent tapping of the tip of the tongue
against the alveolar ridge. Various instrumental analyses like
palatography, radiography and spectrography were done to find
out the precise points and manners of articulation of these two

trills. For all the expirements that follow, K. Srikumar, who is a native speaker of Malayalam, is the main informant.

2 . PALATOGRAPHY. Palatography is one of the best techniques available (See Anthony 1954 and Ladefoged 1957) for investigating the place of articulation (i.e., the contact of the tongue with the roof of the month) during the production of speech sounds. We have used the direct method of palatography in this study. This involves spraying the roof of the mouth including the inside surface of the teeth, with a mixture of three parts of charcoal and one part of cadboury powder. Then the sound to be described is uttered at least five times, so that a clear wipe-off of the tongue may be obtained on the marking mixture. The photograph of the wipe-off, reflected on the mirror, is taken and this is known as a palatogram. Detailed account of the method and advantages of the direct Palatography may be had from Anthony (1954), Ladefoged (1957), Abercrombie (1957), Brown (1977), and Nagamma Reddy (1981).

The palatograms we have made are of word palatograms containing the sounds under investigation but at the same time not containing articulations that give wipe-off on the roof of the mouth other than the one under consideration. To know the articulatory contact regions, Firth's zoning scheme in its improved form by Nagamma Reddy (1981, 1986) was employed which divides the roof of the mouth into several zones by joining lines drawn from meet points of teeth, both horizontally and vertically. Each horizontal zone is assigned a place name and the palatograms are interpreted accordingly. Words for palatography were chosen so as to provide a maximum variety of contexts for the sound under consideration to ascertain its variants, if any, depending on the context. The words used for palatography are :

1. rua : 'shape'   2. ṟava 'a flour'
3. ara 'half'   4. aṟa 'compartment or room'
5. ava/ṟ/ 'They (human)'   6. a: ṟa 'who'
7. a: ṟa 'river'   8. ari 'rice'
9. aṟiva 'knowledge'

A palatographic analysis of these words reveals the following. If the palatograms of words containing /r/ and /ɾ/ are examined (see Pgms. 1 & 2), the wipe-off of /r/ is slightly further back than for /ɾ/ . However, /r/ does not differ from /ɾ/ in actual terms of place of articulation, as both are produced at the alveolar zone. But /ɾ/ may be described as a (voiced) apical alveolar trill, and /r/ as a laminal alveolar trill because /r/ is produced by the tip and blade of the tongue, and /ɾ/ by the trilling of the tip of the tongue alone against the alveolum. This distinction between the two trills seems to be their difference which Ladefoged (1971/1974) seeks to point out in terms of /r/ being advanced and /ɾ/ retracted, as alveolar trills. The former trill is palatalized whereas the latter is velarized, as shown by a large area of contact laterally, at the velar region in the latter, while there is an absence of it in the former (cf. Pgm. 1 & 2, 3 & 4). In order to confirm the difference in the use of the tongue both at the tip and blade and the main body of the tongue, X-rays were made in the present study.

3. X–RAY PHOTOGRAPHY. Still X-rays of the two trills were made in order to observe the tongue position (see Fig. 1 & 2) during their production in words such as /kari/ and /kaɾi/ and /kara/ and /kaɾa/.

The X-ray tracings of the two trills reveal that the tongue positions during their production are quite different from each other even when they occur in the same context. There are three different phenomena involved in the distinction of the two trills. Firstly, there is a raising of the back of the tongue during the production of /ɾ/ irrespective of the quality of the vowel (i.e., front or back). This confirms velarization of /ɾ/ as reported in Ladefoged (1971/77). Secondly, the trill /r/ shows the raising of the front of the tongue during its production even in the context of a back vowel which also further confirms palatalization of /r/ as stated by Ladefoged (*ibid.*). Thirdly, in the context of a following front vowel, the trill /ɾ/ involves the raising of the entire body of the tongue (See figure 1). We might generalize, on the basis of the observations made on the X-rays, that the raising or lowering of the back of the tongue is crucial in distinguishing the two trills whatever the vowel context may be. Thus the two trills seem not

to differ in the place of articulation (as also shown by the palatograms), but to differ in the shape or mode of presentation of the main body of the tongue to the roof of the mouth making the listener perceive them as auditorily distinct.

4. SPECTROGRAPHY. The aerodynamic aspect of speech production is given visual representation by the sound spectrograph whose output, the sound spectrogram, is known by the pseudonymn 'visual speech'. Spectrogram presents the acoustic spectrum of the ever-changing articulatory movements on a three dimensional representation: (1) the horizontal axis representing the time (i.e., Duration), (2) the vertical axis, representing the frequency and (3) the black range of marking, the intensity of the sound. On the spectrogram, the acoustic energy of the sound is imprinted as dark bands on different frequencies. These are the formants (F_1, F_2, F_3 etc.) of resonance in the vocal tract during speech production.

The data used for the spectrographic analysis of trills in different contexts are

1.	ru: pam	'shape'	2.	ṛava	'a flour'
3.	viraḷ	'finger'	4.	pe : ṛ	'persons'
5.	ira	'night'	6.	iṛa	'to cross over'
7.	kari	'charcoal'	8.	kaṛi	'curry'
9.	kara	'bank of a river'	10.	kaṛa	'stain'
11.	ki : ri	'mangoose'	12.	ki : ṛi	'tore'
13.	ku : ra	'roof'	14.	ku : ṛa	'dirt'
15.	ka : ra	'beri beri'	16.	paṛannu	'flew'

An acoustic analysis of the above words reveals the following factors:

a. THE ACOUSTIC STRUCTURE OF /r/ AND /ṛ/. While /r/ exhibits no formants on the spectrogram representing its articulation indicating a complete closure without any interruption as simple tap /ṛ/ exhibits formants. The position of these formants representing /ṛ/ (see table 1), however, varies depending on the immediate vowel context or the quality. /ṛ/ is slightly fronter and

opener before front vowels. Spectrograms show typically two or three low frequency formants below 2100 Hz for /ṛ/ and a brief but marked interruption of the formant structure for /r/.

TABLE 1.   Average formant frequencies of /ṛ/.

	Before front vowel	Before back vowel
F_1	625 Hz	650 Hz
F_2	1275 Hz	1300 Hz
F_3	---	2100 Hz

!. VOWEL QUALITY WHEN FOLLOWED BY THE TWO TRILLS. As seen from the spectrograms 1, 2, 3 and 4, the /a/ before /r/ is somewhat closer (F_1 at 740 Hz) than elsewhere. A converse situation appears when /u:/ has a frequency of F_1 at 500 Hz before an /r/, but 400 Hz before /ṛ/. Formant frequency of the F_2 (See table 2), however, suggests the fronting of both the vowels /a/ and /u:/ before an /r/ in comparison to their occurrence before /ṛ/. The F_2 of /a/ before /r/ is 1875 Hz and it is 1000 Hz for /u:/, but before / ṛ/, the same formant for /a/ is at 1525 Hz and for /u:/ it is at 900 Hz. Here the vowel seems to differ consistently in its quality and therefore, the quality of a vowel might also be contributing towards the distinction of the trills /r/ and /ṛ/.

TABLE 2.   Average formant frequencies and duration in/cs of vowels preceding/following trills in Malayalam.

			r			r	
		F_1	F_2	Duration	F_1	F_2	Duration
Preced							
ing	a–	700 Hz	1825 Hz	15.0	740 Hz	1525 Hz	10.0
vowel	u–	500 Hz	1000 Hz	8.0	400 Hz	900 Hz	8.0
	i–	560 Hz	2250 Hz	10.0	520 Hz	2250 Hz	10.0
Follow-							
ing	–a	760 Hz	1890 Hz	19.0	700 Hz	1450 Hz	16.0
Vowel.	–i	625 Hz	2375 Hz	17.0	600 Hz	1625 Hz	15.0
			Mean :			Mean :	
				13.8			11.8

Environment of a front vowel, i.e., preceding /i/ before /r/ and /ṛ/, appears to obtain the converse of what was obtained above for /u :/ and /a/ (observe Spgs. 7. 8 and 9). /i/ before /r/ is opener (F_1 at 560 Hz) than before /ṛ/ (F_1 at 520 Hz). F_2 in both the cases remains at the same position (2250 Hz). Thus, the close vowels such as /i/ and /u :/ tend to be opener before /r/ than before /ṛ/. Open vowels like /a/ on the other hand, tend to be close before /r/ than before /ṛ/. As for the movement of the tongue on the horizontal plane, all the vowels are fronter before / r/ compared to /ṛ/ which is deducible from the place of con-sonantal production.

1.   VOWEL QUALITY WHEN PRECEDED BY THE TRILLS /r/ AND /ṛ/. /a/after /r/ is opener (760 Hz) than after /ṛ/ (700 Hz).   In terms of place, it is fronter after /r/ (1890 Hz) than it is after ṛ (1450 Hz). Observe Spgs. 1, 2, 5, 6, 7, 8).   Likewise if it is /i/ following /ṛ/ then the stricture is somewhat opener (625 Hz) than if it is after /ṛ/(600 Hz).   The /i/ is more front after /r/.   (F_2 at 2375 Hz) than

after /ɾ/ (F$_2$ at 1625 Hz) see Spgs. 3, 4, 9, 10).

It is interesting to note a considerable difference in the direction of movement and the length of the transition associated with the two trills. For instance the effect of the vowel /a/ before /r/ has a raise in the frequency of F$_2$ when compared to the same vowel before /ɾ/ (see Spg. 1 and 3 and compare them with 2 & 4). Similar to this, the /a/ even when it follows the trills has higher start of F$_2$ after /r/ than after /ɾ/ (see Spg. 7, 8). The difference in the length of the transition is much more striking when we look at the close vowels immediately on either side of the trills.   For example, in spectrograms 5 and 6, we observe upward movement of the F$_2$ before both the trills but the transition of the /u :/ is much longer before /r/ than before /ɾ/. As opposed to raising of the F$_2$ for /u :/ before the trills, the close front vowel in the same has the falling transition of the F$_2$ but again the F$_2$ has a longer transition before /r/ than /ɾ/. Moreover, the following close vowel also reveals a raising but longer transition of the F$_2$ after /ɾ/ than before /r/ (see Spgs. 10 & 9). On the whole, the transition to the following/preceding close front vowel takes a short time in the pattern of /r/, which might suggest that the timing of the transition is also an important factor in distinguishing the two trills.

d. DURATION OF THE VOWELS AND THE TRILLS.

(1) Duration of vowels followed by trills : Duration of the vowels before trills in Malayalam shows a tendency to be shortened if the trill in question involves a retraction of the tongue tip as in /ɾ/. But the vowels before the non-retracted trill (i.e. /r/) show a longer duration. However, the difference in length of the vowels before the two trills does not in any way compensate with the duration of the trills themselves (see below).

(2) Duration of trills : Table (3) gives the measurment of duration in centiseconds (cs) for the trills /r/ and /ɾ/ in the context of front and back vowels. /ɾ/ shows a shorter duration before front vowels than before back vowels. However, they do not have any difference in duration before a back vowel. Thus it appears the vowel height has a bearing on the duration of the preceding vowel

in the context of both the trills. The duration of /r/ when com-
pared to the /ṛ/ does not seem to differ appreciably. We may
generalize by saying that the duration of /r/ is either equal to or
longer than the /ṛ/. (see Table 3).

.

TABLE 3.   Average duration incs of trills in word-Medials
position

	Before front vowel	Before back vowel
– r –	6	6
– ṛ –	5	6
Difference :	1	0.

5. PSYCHOACOUSTIC (PERCEPTION) TEST. As there are sys-
tematic and significant acoustic differences in the vowels preceed-
ing /r/ and /ṛ/, as well as in the consonants themselves,
Psycho-acoustic (perception) test was conducted on the perception
of Malayalam /r/ and /ṛ/ both with native and non-native speakers.
For this the subjects were asked to judge these sounds in random
and in contrasting pairs as they listened to a pre-recorded sample
which consisted of a set of isolated words like /kara/ and /kaṛa/,
/puram/ and /puṛam/, /ku : ra/ and /ku : ṛa/, and /ki : ri/ and /
ki : ṛi/. These words were found to be perceived differently but
the sound segments bearing the distinctions were not the same for
a native and a non-native. Native speakers perceived the contrast
between the words in random and in pairs to be in terms of /r/ and
/ṛ/. Obviously they were guided by the alphabetic system of
Malayalam which provides distinctive symbols for them. But non-
natives on the other hand perceived the difference to rest on the
vowels preceding the trills but the trills were the same in both
environments for them. However, members of the contrasting
pairs are marked by the acoustic difference (as noted earlier)

in both the vowel and the consonant. The native speakers of the language, even when they are linguistically trained (for instance K. Srikumar himself at first), are not sensitive to the vowel quality or variables in the vowel difference but to only the consonant difference in the pairs of contrasting words such as /kari/ and /kari̱/. Similarly the Telugu speakers (B. Ramakrishna Reddy and G. Uma Maheswara Rao trained in linguistics) judge variation in the sounds of the same pair differently from Malayalam, they perceive the difference to be in the vowel, not in the consonant itself. Both the language speakers, i.e., Telugu and Malayalam, behaved differently when subjected to the perception testing which supports the general belief that sensitivity to an acoustic phonetic property depends crucially on whether that property is said to play a distinctive role in the listener's native language. But for the native speakers the vowels before /r/ and /ṟ/ were the same. The non-natives found the vowel to be back before the /ṟ/ and front before the /r/.

Thus the differences were perceived in terms of what the languages in question define as significant for them, agreeing well with the earlier studies on perception of speech sounds in general. Malayalam phonemic system has the difference in the consonants themselves but the vowels were analysed as the same. But in languages where the were not distinguished phonemically the difference of Malayalam words is found to reside in the vowels rather than in the consonants.

The pairs of words (e.g. /kara/ and /kaṟa/) are distinguished by the difference in trills themselves by the native speakers, but by the non-natives the same pair by the difference in the vowels before the trills, though none of them feel they differ in both consonantal and vowel quality as revealed in aearstic study. A further experimentation (i.e., tape-splicing and synthesis) with native speakers is necessary to see whether the clue for the identification, discrimination, or the distinction between the two consonants (i.e., rs) lies in the consonants themselves or in the vowes also, if so, to what extent. How far the language or linguistic experience can influence perception, since categorical perception appears to be language specific and strongly related to the phonemic con-

trasts made by the listener (Borden and Harris, 1979). As Lieber-
man (1977 : 128) points out "we can never be certain that we have
actually isolated the acoustic cues that people use to transmit
information to each other unless we run psychoacoustic studies in
which human listeners respond to acoustic signals that differ with
respect to the acoustic cues that we think are relevant."

6. CONCLUSION. Acoustically the articulation of /r/ and /ɾ/
seems to have a greater influence on their surrounding vowels, if
it is a back vowel, it tends to be close before /r/ than before /ɾ/. In
terms of the horizontal dimension in the oral cavity, /a/ anticipat-
ing the stricture necessary for the following consonant is fronter
before /r/ than before /ɾ/, the preceding /i/ on the other hand
shows an opener stricture before /r/ rather than before /ɾ/. This
may be attributed to the fact of assuming the position
anticipatorily before back vowels than before front vowels.

So far we have been referring to the two kinds of rs as trills.
If a trill is defined as "a type of consonant segment resulting from
a stricture of intermittent closure" as by Abercrombie
(1967 : 493), or a typical trill consisting of "about three vibratory
movements" as stated by Ladefoged (1975 : 147), then one of the
two rs does not fit into these definitions. However, according to
Abercrombie some trill articulations are realized as only one com-
plete interruption of the air-stream, but that cannot be considered
a tap. This observation of Abercrombie suggests that both the rs
in Malayalam may be labelled as trills. One of the two trills has
complete interruption without any formant like structure and the
other has an initial complete closure followed by a distinct for-
mant like structure during its articulation. Besides the acoustic
distinctions, the X-rays study reported in this paper confirms that
articulatorily one of the trills is palatalized and the other
velarized, which is in consonance with the earlier statement by
Ladefoged, (1977; see for further details section 3). However, in
terms of the place of articulation, both the rs may have to be
termed as alveolar, differentiated by the part of the tongue
involved, as apico-alveolar for /ɾ/ and lamino- alveolar for /r/.

A consideration of both the instrumental phonetic evidence
and the statements of Abercrombie (1967) and Ladefoged (1975)

in relation to the articulation and definition of a trill, lead to a number of comments when there is evidence for a difference in the production of the two rs themselves and also the environment in which they occur. The study indicates clearly, that the distinction between the two rs in Malayalam has to be made not only on the basis of the phonetic nature of the segments involved but also of the environment in which they occur. The phonetic change in the consonant and the immediate vowel, may individually (i.e. either one or the other) be used as clues by the specific languages. A psycho-acoustic test administered on the native speakers of Malayalam and non-natives (pariticularly the Telugus) prove that the listener's perception depends on either (i.e., Consonant or vowel) of the phonetic changes in the segments in a minimal pair (for further details see section 5). A further experimentation controlling the variables with tape-splicing and synthesis is essential to see to what extent the native speakers of Malayalam can make use of the vowel and/or difference in distinguishing the two rs.
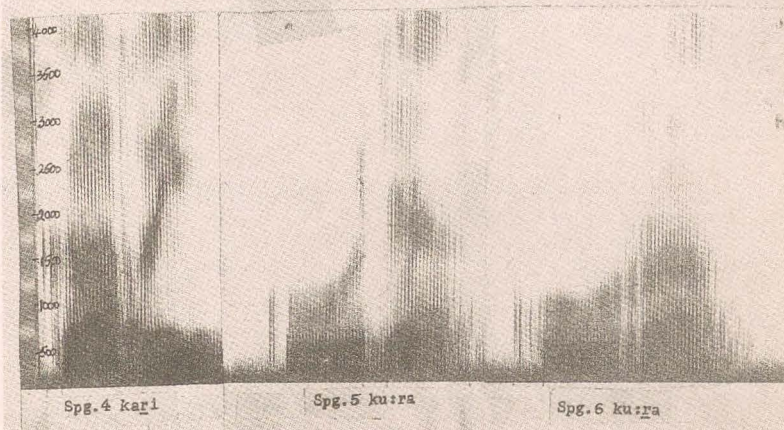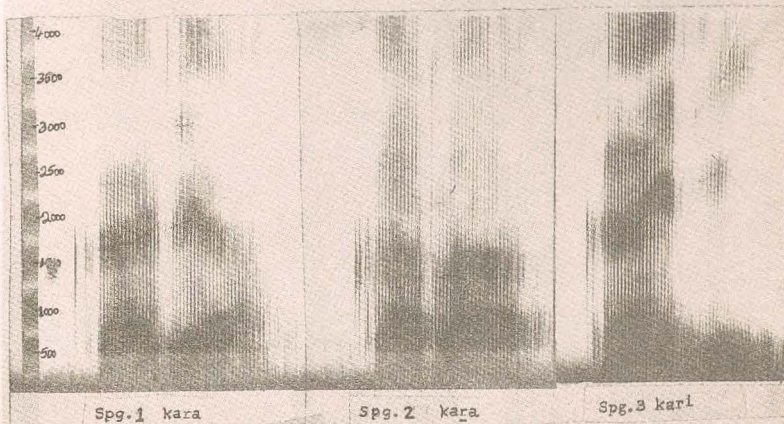
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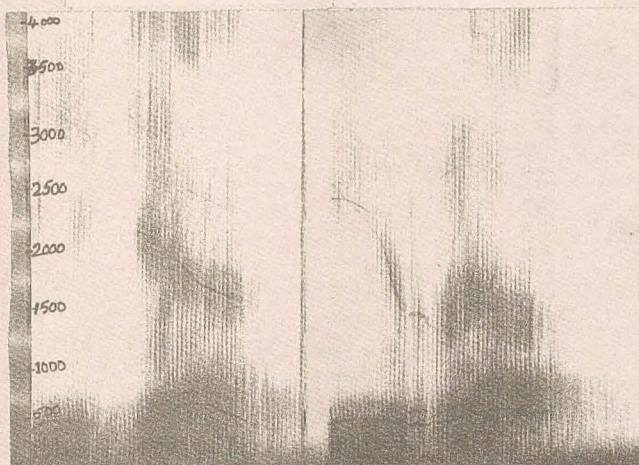ZVELEBIL, K. 1970. *Comparative Dravidian Phonology.* The Hague: Mouton.

PALATOGRAMS OF MALAYALAM TRILLS

Pgm.1 ara

Pgm.2 ara

Pgm.3 ari

Pgm.4 ari

SPECTROGRAMS OF MALAYALAM TRILLS

Spg.1 kara   Spg.2 kara   Spg.3 kari
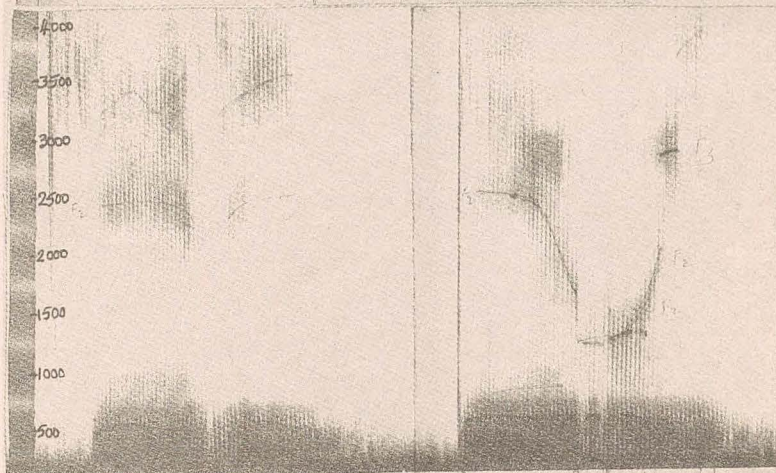
Spg.4 kari   Spg.5 ku:ra   Spg.6 ku:ra
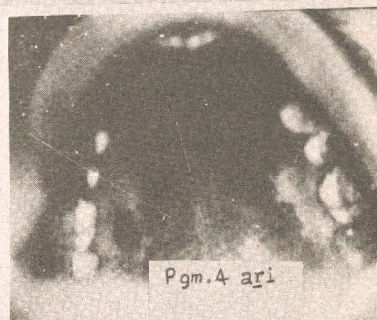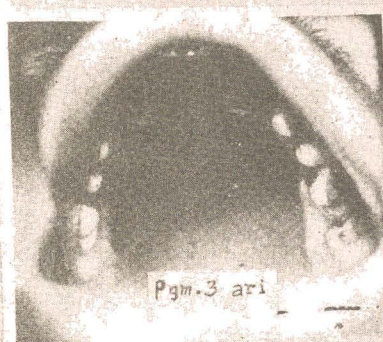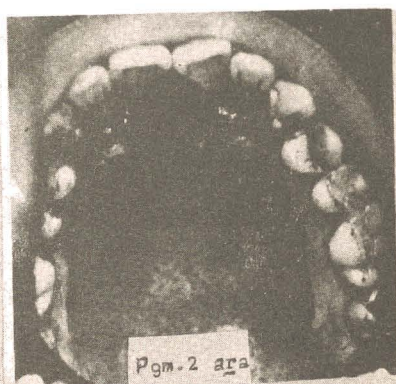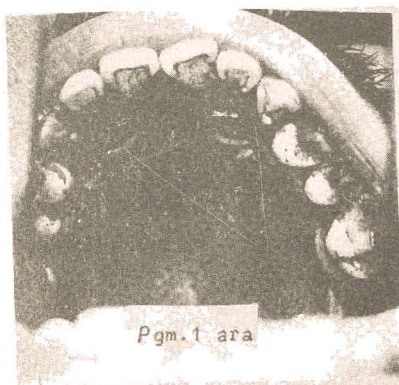
SPECTROGRAMS OF MALAYALAM TRILLS

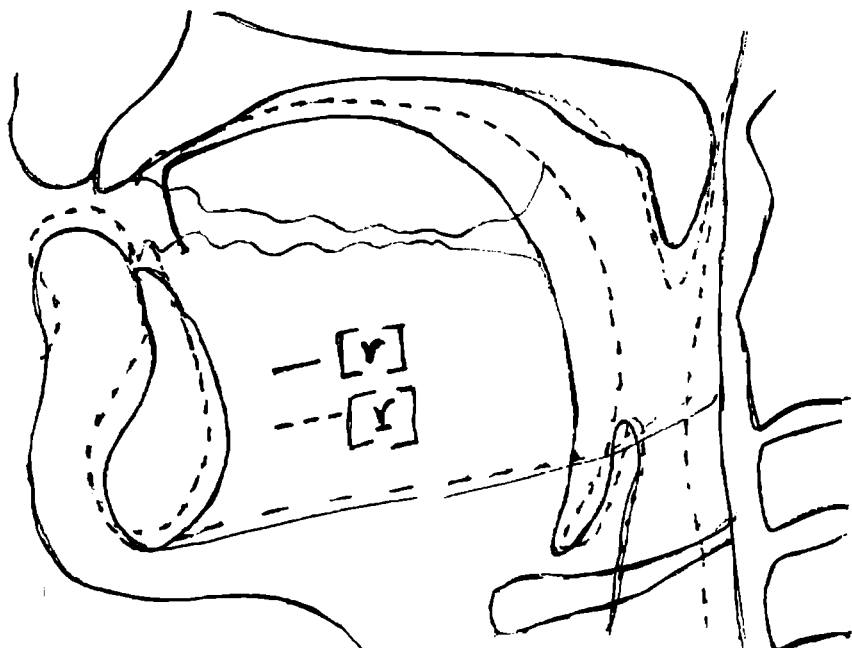Spg. 7 ira
Spg. 8 ira
Spg. 9 ki:ri
Spg. 10 Ki:ri

Fig. 1. Superimposed X-ray tracings of the tongue positions of /r/ and /r̲/ before a front vowel in /kari/ and /kar̲i/.
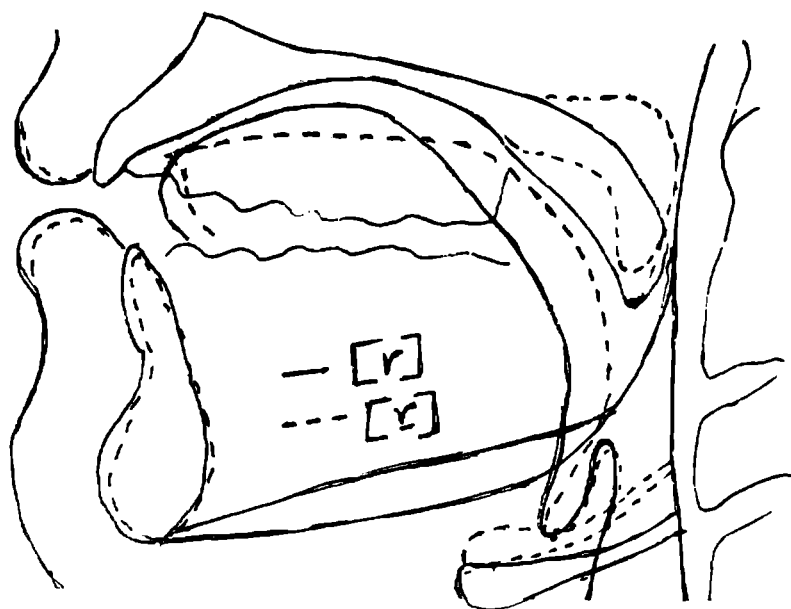

Fig. 2. Superimposed X-ray tracings of the tongue positions of /r/ and /r̲/ before a back vowel in /kara/ and /kar̲a/.

ARE COMPLEX SENTENCES REALLY COMPLEX ?
AN EVIDENCE FROM CHILD LANGUAGE

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0. Research on child language acquisition gives us evidence tha there are structures which are acquired late by children. Thes(are sentences which are called 'complex' at the level of surfac(structure. And there is no dispute that "the onset ability with' th(complex sentences greatly increases the child's generative capacit) and is an important step forward in language acquisition" (Bower mann 1979).

This paper is an attempt to examine the acquisition of a fev complex structures by Telugu children, studied experimentally b) the author (Usha Devi 1986) and to find out if there are any rela- ·ive complexities in the acquisition of the complex sentences ir Telugu. The paper also suggests that the relative difficulty in th(acquisition of these structures not only gives us the informatior regarding the order of acquisition but may as well establish th(linguistic complexity of the structures themselves. "The Psy- cholinguistic notion, as the linguistic, holds that the number o: transformational operations applied to a base-produced phrase marker (of a Kernel sentence) determines the difficulty (or com- plexity) of producing or comprehending a surface structure' (Beilin, 1975 : 3).

1.0 THE DEVELOPMENT OF COMPLEX SENTENCES IN TELUGU.

Most of the research on acquisition of complex sentence: consists of experimental studies on children aged 3 years anc above. In the absence of any kind of acquisition study on Telugu except Nirmala (1981) in which complex sentences were no studied, Usha Devi (1986) conducted a few experiments to elici certain complex sentences from children ranging in the age fron 3;0 – 5;6 years.

1.1   SUBJECTS. The study consisted of forty children in total divided into five age groups with six months interval between them. There are eight children in each age group and they were all selected from and studied individually at a school in Secunderabad.

1.2   METHOD. The experimenter prepared an imitation, comprehension and production test, in which imitation test could systematically cover all or at least the major properties of a syntactic pattern under study. Each child was tested individually and asked to repeat after the experimenter and the whole speech was recorded on a portable Sanyo-tape-recorder with a built – in microphone.

1.3   MATERIAL. The imitation test consisted of the following sentence structures of Telugu: (1) Negatives,   (2) Reflexives,   (3) Relative clauses,   (4) Coordinatives and (5) Subordinatives.   Of these, only those sentences which are considered linguistically complex, will be discussed below under each syntactic pattern and children's difference in rendering a particular sentence in relation to the one provided by the researcher for imitation to the child.

2.   RESULTS. The study systematically shows the relative difficulty of certain sentences in imitation. This is found to be true not only with the different syntactic patterns as such but among the different types within a structure itself.   These will be discussed under each syntactic pattern separately below.

2.1   NEGATION. Usha Devi (1984:134) clearly pointed out the relative 'complexity' of certain negative sentences which the children found difficult to imitate. These sentences, where the focus and emphasis was on negation, included sentences with nominalization (with *adam*), complementation (with *ani*), and subordination (with neg. *akunda*).   They are:

1.	*atanni*	*raavaddani*	*anadam*	*leedu,*	*kaani*
	him	come-not-that	saying	not	but
	rammani	*kuudaa*	*anadam*	*leedu*	
	come-that	also	saying	not	

'I am not saying that he should not come but I am not even saying that he should come'.

2. *nuwwu   annam   tinakundaa   badiki   vellakundaa*
   you sg. rice/food eat without   school to go without

   eem   ceestunnaawu ?
   what   doing pro you
   'What are you doing without eating food and without going to school ? '

3. *vaadu   raakapoovadam   naaku   naccadu*
   he   comming-not   to me   like-not
   'I don't like his not coming'.

4. *amma   rammantee   neenu   vellakundaa   undanu*
   mother coming not   I   go-without   remain not
   'I cannot afford not to go if mother asks me to do so'.

In the imitation of these sentences all the children from lower to higher age groups have failed. Out of the 48 responses expected only 15 to 22 could be repeated 'correctly' by the children from 6, and there was no single 'correct' repetition by the younger children belonging to 3;0 to 3;6 years. Likewise children couuld not repeat sentences with double negation (*ibid* P. 132 – 3) where the negative elements (*aka, akunda*) were in the embedded clause as well as negative in the matrix clause. This revealed a relative 'hierarchy' of the development of negatives and the author proposed a 'markedness scale' for them as :

(A)   NEGATION

Lexical	inflectional	Semantic
1	2	3

(B)   LEXICAL NEGATION

Rejection	non-existence/absence.	denial
(*voddu*)	(*leedu*)	(*kaadu*)
1	2	3

1 = Unmarked,   2 = Less marked   3 = marked.

It is suggested that sentences with structural and semantic dif-
ficulty are complex and therefore are acquired later.

2.2 REFLEXIVES. Among all the sentence patterns selected for the
study it was observed that reflexives were easier and acquired by
all the children, even by the lowest age group. It may be said that
reflexives emerge much earlier than the youngest age in the study
(below 3 years). Though there are certain interesting points in
this study which are of no relevance for the present paper, it
however, also gives us evidence similar to the results of negation,
where the subrodinate sentences such as :

5. *poolis dongani tannukontuu tiisuku velleedu*

   police thief acc. kicking contd. took along

   'Police took along (with him) the thief kicking him'.

6. *vaallu   illu   ammukookapotee   baagundeedi*

   they   house   sell-one's own-without good-would-be

   'It would have been better if they had not sold out
   their house'.

7. *eppuduu   tinukuntu   taakkuntu   undakuudadu*

   always   eating-contd.   drinking-contd. remain-not

   'One should not always remain eating and drinking'

could not be imitated by the children from 3;0 to 4;0 years,
whereas the older children fron 4;0 years to 5;6 could render
seven to eleven correct sentences out of the total of sixteen
sentences.

2.3 RELATIVE SENTENCES. In this study a few relative clauses are
taken as classified into four types : (i) Clausal (ii) Peri-Clausal,
(iii) Phrasal and (iv) Pseudo-relatives (Usha Rani, 1980), out of
which only two types, the clausal and phrasal are considered as
dominant and frequent (see Usha Devi 1986 for further details).
The results of the study indicated that a particular pattern
classified as type (iv) was more difficult for children when com

pared with the other three patterns. Interestingly, we could get evidence where children have processed a few relative clauses and rendered them as coordinate sentences.

8. *ee sanci erragaa undoo, aa sanci baagundi*

    'the bag which is red is good'

        sanci erragaa undi, sanci baagundi

        'bag is red and bag is good'

9. *naa pustakam cimpaadee, aa abbaayi paaripooyaadu*

    and

10. *(naa) pustakam cimpina abbaayi paaripooyaadu*

    'the boy who tore my book, (that boy) ran away!.

        abbaayi pustakam cimpindu, (abbaayi) paaripooyaadu

    'boy tore book and (boy) ran away'.

There are six to ten instances of relative clauses modified as coordinates. That is in Type II and III 6 each, and Type II (periclausal) 10. The fourth type being not very common in the language which we could only get one to four correct responses out of 24 (*ibid.* Table 3.3.4. p. 107), there was no question of modification and the complexity of this particular type among all the relative types was self-exemplary.

2.4. MULTIPROPOSITIONAL SENTENCES: Thirty sentences where there were more than one proposition (clause) with coordination, subordination and a few other sentence patterns are studied under the title multipropositional sentences. This includes various deletion rules in conjoining (Equi – NP deletion, identical VP deletion) and the process of surface subordination from a sentence which could also be rendered as a coordinate sentence (*ibid.* Chapter 3, Section 4 pp 127 -160). The study revealed that phrasal coordination is simpler than sentential coordination, because children performed better in imitating phrasal coordinates. 13 to 29 responses out of 32 given to them in phrasal coordination were correct as opposed to 10 to 45 out of 64 of sentential coordination. Thus, children's acquisition of multi-

propositional structures indicates that the phrasal coordination and backward deletion are easier than sentential coordination and forward deletion. Likewise, alternative sentences were found to be difficult to imitate as opposed to additive sentences. That is, while no child from the age group of 3;0 – 3;6 could imitate even a single construction, older children 4–5 years imitated 12/13 out of 16 sentences (*ibid* 3.4.7.p. 151).

3. DISCUSSION. Though different studies on the acquisition show different results on the earlier emergence of sentence patterns, (Bloom 1970, de Villiers and de Villiers 1978, Lakshmi Bai 1984, de-Boysson Bardies 1970, and Phinney 1981 on negation; Flusberg 1982, de Villiers et al 1976, Fluck 1978, de Villiers et al. 1977, Ardery 1979 and 1980, Lust and Mervis 1981 on coordination), all the studies propose a late acquisition of the complex sentences (also Limber 1973 and Bowerman 1979). This paper, however, would not try to pretend to discuss the data and result obtained from the study of Telugu children in relation to these studies and such a task is beyond the scope of this paper.

However, it is observed that the findings of the paper also support the general view of the late acquisition of the complex sentences. Moreover children's various strategies to process and modify the sentence patterns also reveal a few interesting findings as for example children's processing and rendering of relative clause as coordination (Slobin and Welsh 1973, Usha Devi, 1986). This paper, in conclusion, suggests two important proposals: (1) That the language acquisition data also gives us evidence to consider that certain sentences are inherently complex (by way of order of acquisition) and (2) that there may also be hierarchical complexity among the various complex sentences: (a) Some complex sentences emerge earlier than the others (b) and some complex sentences are processed into a few others (as mentioned above). This hierarchical complexity may be tentatively suggested on the basis of Markedness theory: (I) Though simple negatives and reflexives are acquired earlier, they may not be easy for children to produce or comprehend when two or more clauses are combined into a negative or reflexive sentence. (II) That relative clauses are more difficult than coordinatives, and alternatives

are more difficult than additives. A tentative proposal of Marked-
ness scale for the development of Telugu sentences is.

Reflexives	Coordinatives		Relative
Negatives			Clauses
(simple)	additive	alternatives	

1	2	3	4
Less or			Marked
Unmarked			

However, it should be noted that our knowledge of the acquisi-
tion and development of complex sentences in Telugu is still very
limited and this also seems to be true with other languages where
a lot of work is done. And yet, the author hopes that further
research on Telugu and other languages may contribute either to
strengthen or to refute the tentative observations proposed
in this paper.*

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NEWS OF THE DEPARTMENT

1. INTERNATIONAL CONFERENCE

As part of its silver jubilee celebrations, the Department of Linguistics at Osmania University, Hyderabad organised a five-day International Conference on Language and National Development: The Case of India (ICLAND India) from 4th to 8th January 1988. Professor Bh. Krishnamurti was the director of the conference. The conference was co-sponsored by the following Institutions:

1. University of Hyderabad.
2. Central Institute of English and Foreign Languages, Hyderabad.
3. Central Institute of Indian Languages, Mysore and
4. Central Hindi Institute Agra.

A total of about 150 scholars participated in the Conference. The delegates came from all over the country as well as from the USA, USSR, China, Bangladesh, Nigeria and Japan. About 90 papers on the following major themes were presented:

1. Literacy, Linguistics and Writing schemes;
2. Major Indian Languages: Planning and Development;
3. Minor and Minority Languages;
4. Policy Formulation at the State/National level and
5. Comparative cross-cultural models.

The International Committee met after the Conference and decided to publish about 30 selected papers in a volume.

II. NATIONAL SEMINAR

A two-day National seminar on " Deixis in Indian language " was hosted by the Centre of Advanced Study in Linguistics, Osmania University, Hyderabad, on 10th and 11th March, 1988. The seminar was inaugurated by Dr. E.Annamalai, CIIL, Mysore. About 23 papers were presented and discussed comprising various aspects of deixis theoretical, person, spatical, discourse social and temporal. Most of the Indian languages including the tribal languages were represented in the descriptions of deixis. The proceedings of the Seminar will be published in a monograph under the editorship of Prof. H.S.Ananthanarayana and Dr. B. Ramakrishna Reddy.

III. VISITING PROFESSORS/FELLOWS

Dr. Ashok R.Kelkar, Professor of Applied Linguistics, Centre of Advanced Study in Linguistics, Deccan College, Pune was a Visit ing Professor at the Centre of Advanced Study in Linguistics, Osmania University, from January 2nd to 25th, 1988 He delivered a series of special lectures on ' Introducing Semiotics ', comprising the following topics :

1. Semiotics as a field and as a discipline,

2. The form of a semiotic event,

3. The form of a communicative event,

4. Signs in relation to each other,

5. Signs in relation to signates, and

6. signs in relation to sign-users.

Dr. Satya Swaroop Misra, Professor and Head, Department of Linguistics, Benaras Hindu University, Varanasi was a Visiting Fellow at the CAS from January 29th to February 12th, 1988 and conducted a seminar for two weeks by delivering a series of lectures on 1.Indo-European , Indo-Hittite and Aryan,

2. Some reconstructional problems in Indo-European vowels

3. Some reconstructional problems in Indo-European consonants

4. The recently discovered Arcatolian languages

5. Importance of Sanskrit in Indo-European, and 6 Fresh linguistic evidence for an original home of Aryans or Indo-Europeans in India.

Dr. R. N. Srivastava, Professor of Linguistics, University of Delhi, Delhi, was a visiting Professor at the Centre during November (14th to 26th) 1988. He conducted a seminar for two weeks on ' Linguistics and literacy'. Various facts and dimensions of literacy from the linguistic point of view in order to establish clear relationship between speech and writing on the one hand and between literacy and language-use on the other were examined. Course content included talks and discussions centered around

1. Nature of literacy

2. Machnics of literacy

3. Pragmatics of literacy

4. Ethnography of literacy.

An excelent reading list essential and basic for understanding the linguistic dimensions of literacy, the reding process, problems of literacy, in various disciplines and so forth was also provided by him.

IV GUEST LECTURES

October 7 - Dr. M. S. Ningomba, Reader in Linguistics, Manipur University, Imphal : 'Tibeto-Burman Languages'.

October 11 and 14 - Dr. A. K. Sinha, Reader in Linguistics, University of Delhi :

1. 'Hindi Anaphora and Binding theory'; and

2. 'Theory of equivalence in translation'.

November 17 and 19 - Dr. Boris Zakharyin, Professor of Linguistics, University of Moscow, U.S.S.R. :

1. 'Typological problems : Theoretical foundations' : and

2. 'Typology of South Asian Languages'.

December 23 and 24 - Professor N. H. Zide, Professor of Linguistics and South Asian Studies, University of Chicago, U.S.A. :

1. 'The Munda Languages : Topics of general linguistic interest' and

2. 'Problems of field work with Indian tribal languages'.

V. PUBLICATIONS BY STAFF MEMBERS IN 1988

H.S. Ananthanarayana : *'Expressions of Politeness in Sanskrit'.* VIJ XXIII. p.p. 103-115.

_____. *'Treatment of Lexical relations in the Indian tradition'.* IJOL 16, No.2, p.p. 213-219.

K. Nagamma Reddy : *'The duration of Telugu speech sounds : An acoustic study'.* Journal of Institution of Electronics and Telecommunication Engineers, Vol.34, No.1. (Special issue of JIETE on speech procession), Delhi, p.p. 36-57.

. *'Toward a reanalysis of aspirated Consonants'.* proceedings of the XV All India Linguists Conference. Poona, p.p. 29-47.

_____. The MP Birla Foundation - Encyclopedia Asiana Entries on 1) Acoustic phonetics, 2) Aphasia, 3) Sound-spectrograms, 4) Speech mechanism, 5) Desophageal speech, 6) Language laboratory and 7) Palatography.

_____. (Co-authored with K. Srikumar) : *Articulatory and acoustic study of trills in Malayalams'.* OpiL, Vol. 14, p.p. 89-101.

D. Vasanta (Co-authored with G. Studebaker, Ch. Pavlovic and R. Sherbecoe) : *'Frequency importance functions for a feature-recognition test material.* JASA, Vol.83, No.6. p.p. 2372-2382.

VI. RESEARCH PROJECTS

H. S. Ananthanarayana	Sanskrit Studies
B. Ramakrishna Reddy	Tribal language studies
K. Nagamma Reddy	Phonetics of Kharia
Usha Rani and D. Vasanta	Agrammatism in Telugu
K. Ashirvadam	Munda languages.

All these projects are funded by the U.G.C. through CAS in Linguistics, Osmania University.

VII. AWARD OF RESEARCH DEGREES

M. Phil.

Sudheer Bhan, SEMANTIC WORD CATEGORIES IN URDU-HINDI SPEAKING APHASIC ADULTS (Supervisor: Dr. B. Lakshmi Bai)

Ph. D.

G. Umamaheswar Rao, A COMPARATIVE STUDY OF THE GONDI DIALECTS: WITH SPECIAL REFERENCE TO PHONOLOGY AND MORPHOLOGY (Supervisor: Dr. Bh. Krishnamurti).

DISSERTATION ABSTRACTS

SUDHEER BHAN *Semantic Word Categories in Urdu-Hindi Speaking Aphasic Adults.*

This study revolves around three Dakhini Urdu and three Hindi speaking literate, adult aphasic patients-five Broca's and one anomic aphasic- age range 20-70 suffering from Cerebro-Vascular accident resulting in right side paralysis and thrombosis studied at three leading hospitals in Secunderabad, Hyderabad and New Delhi. Except first patient, all others were right handers. They were not colour-blind and suffered a cerebral stroke

not more than one month prior to the date of first recording and had attained neurological stability. These patients were administered *"Semantic word Categories test in Urdu-Hindi"* in three sessions, which comprised colour names, furniture items, object naming, paradigmatic relations, synonymy, antonymy, homonymy, lexical categories of vegetables, fruits, animals, birds and numerals. It was designed to evaluate the lexical competence of Broca's and Anomic aphasics.

Following are the main findings of the present study:

1. Broca's and Anomic aphasics based their name selection and name association of colour names on semantic features — /brightness/ and /saturation/. (e.g. hara: 'green' – Pi: la 'Yello', Ni: la 'Blue' – Ka: la 'black'), object names on the Semantic features/flat/, 'round' /glass/ /observer/ /container/. (e.g. aina 'mirror' – ainak 'spectacles') and their body part naming reflected right-left disorientation.

2. In visual confrontation naming of objects, their target-item and error were sometimes related at syntagmatic semantic level. (e.g. aina *mirror'* — kanhi 'comb').

3. In descriptive naming of kinship terms, Broca's Aphasics reversed spouse relations (e.g. naded 'husband's sister' – bi: bi: Ki: bEhan 'wife's sister'), confused consanguinal relations on the basis of generation component (e.g. na: na 'mother's father' — ma: ka bara: bhai 'mother's elder brother') and non-consanguinal relations on the basis of 'sex' and 'generation' components. (e.g. da: ma: d 'daughter's husband' —beti: ki: bahu 'daughter's daughter-in-law'). Their synonymic associations were related at syntagmatic semantic level (e.g. jhar 'tree' — paha: r 'hill') and object naming was sometimes marked by circumlocutory carrier phrases. (e.g. botal 'bottle' — dava: i ki: si: si: 'medicine bottle')

4. Neologisms were specific to Anomic aphasic only, but some times noticed in Broca's aphasics too. (e.g. hara: 'green' — nakura bedi).

5. Recovery patterns of Broca's and Anomic Aphasics were usually inconsistent.

6.   The present study does not provide any conclusive evidence for Jacobson's regression hypothesis.

G. UMAMAHESHWAR RAO *A comparative study of the Gondi dialects : with special reference to phonology and morphology.*

The present thesis is a modest attempt to study the dialects of Gondi at phonological and morphological levels. It is aimed at the identification of various Gondi dialects on the basis of phonological and morphological isoglosses. It also includes the reconstruction of the phonemic inventory, pronouns, nominal and verbal inflectional suffixes.

Chapter one includes a short introduction about Gondi and a brief annotated bibliography of previous studies. There is also a discussion on the language and dialect controversy, and the data collected from various places from the adjacent areas of the four states of central India viz. Andhra Pradesh, Maharashtra, Madhya Pradesh and Orissa form the corpus for the study. Chapter two comprises phonological sketches of individual dialects and a comparative phonology of the dialects of Gondi. The latter is based on the comparison of the sound correspondences of four hundred sets of cognate groups in various Gondi dialects.

Chapter three is a comparative study of the inflectional morphology of nouns and pronouns. Sections on plural formation and oblique stem formation include elaborate discussion with regard to the development of variation in modern Gondi dialects. A comparison of the reconstructed Proto-Gondi personal pronouns with similar reconstruction in the other Dravidian languages suggests that the variation among the personal pronouns is not a phenomenon exclusive to Gondi but it may be traced to Proto-Gondi. There are ten major sets of masculine demonstrative pronouns among the dialects of Gondi. It has been demonstrated that the loss of contrast between the singular and plural nominative forms of masculine demonstrative pronouns is due to the phonemic merger of *r with *r, followed by various efforts towards restoring the morphological distinctions resulted in not less than a dozen sets of masculine demonstrative

pronouns each of which being a characteristic of a particular dialect. The dialects of Gondi form two groups with respect to the vowel quality of the interrogative base be-/ba-. The lowering of the vowel -e- of the base *be- in the dialects of WG, NG, CG, NBG, HMG, AG, and SG was one of the earliest cases of lowering of short mid vowels in Gondi.

Chapter four deals with a comparative study of verbal inflection in various Gondi dialects. In each subsection, certain inflectional suffixes of various verb forms were compared and in each case a reconstruction of various suffixes for Proto-Gondi is attempted. The last section of this chapter deals with conjugational classes of verbs in various dialects. Proto-Gondi system of conjugational classes of verbs is reconstructed.

In addition to the phonological and morphological distinctions certain 'lexical'differences between the northwestern and the southeastern groups of dialects are also identified, e.g. porol : peder 'name', marmi : peNDul 'marriage', menj : garbom 'egg', min : kike 'fish' etc. Chapter five concerns with a detailed discussion on the origin and diversification of such lexical innovations.

Subgrouping of the Gondi dialects was attempted in the last chapter. The proposed subgroups among the dialects of Gondi is based upon the comparative evidence of a number of innovations in phonology, morphology and in the lexicon. The new subgrouping, unlike the earlier ones, is distinct in several respects. The earlier attempts on subgrouping the Gondi dialects have not taken into consideration of morphological and lexical innovations. The following results may be metioned : Ten major dialects are identified, and they form tow subgroups; Northwestern group – comprised of Western Gondi, Northern Gondi, Central Gondi, North Bastar Gondi, Adilabad Gondi, and Southern Gondi ; Southeastern group – consists of Hill Maria Gondi, South Bastar Gondi, Dorli Gondi, and South Eastern Gondi. Certain overlapping and cross-cutting isoglosses are observed which may be due to diffusion and areal convergence.

FELICITATION TO PROFESSOR BH. KRISHNAMURTI

Professor Bh. Krishnamurthi retired in June, 1988 from the service after serving the Department of Linguistics, Osmania University, for nearly tow and a half decades. A felicitation function was organised by the Department in his honour on the 17th July, 1988 under the Presidentship of Prof. T. Navneeth Rao, Vice-Chancellor, Osmania University. The function was attended by the teachers, students and other members of the University.

A Felicitation volume entitled *"Studies in Dravidian and General Linguistics: A Festschrift for Bh. Krishnamurti"* was released by the Vice-Chancellor on the occasion. The volume is edited by B. Lakshmi Bai and B. Ramakrishna Reddy and it includes articles by teachers, colleagues, students and admirers of Prof. Bh. Krishnamurti. The contributions demonstrate the range and depth of his interests in such areas as Comparative Dravidian, Descriptive linguistics, Historical linguistics, Language contact and convergence, Dialectology, Socilinguistics, Language Planning and Language analysis. His influence on the scholarly world is acknowledged throughout this volume.

The contributors to the volume include M. B. Emeneau; H. M. Hoenigswald; J. Aitchison; H. S. Ananthanarayana; M. S. Andronov; M. Aronoff; G. Cardona; B. Comrie; P. Dasgupta; C. J. Daswani; R. M. W. Dixon; J. Fishman; J. W. Gair; N. Gurov; Y. Kachru; G. B. Kelley; P. Ladefoged; B. Lakshmi Bai; L. Lisker; I. Madieson; C. P. Masica; M. V. Nadkarni; K. Nagamma Reddy; P. C. Narasimha Reddy; M. Ogura; B. Ramakrishna Reddy; A. Sexena; H. Schiffman; I. Smith; S. N. Sridhar; R. N. Srivastava; S. Starosta; S. B. Steever; K. V. Subba Rao; P. S. Subrahmanyam; G. Umamaheshwar Rao; S. K. Verma; C. Viswanatha Rao; W. S. Y. Wang; K. S. Yadurajan; B. Zakharyn; and N. H. Zide.

The Department would like (to use the present volume of the OPiL) to wish a long, happy and healthy retirement to Professor Bh. Krishnamurti.

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