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Phonological Study Of Tulu Language

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Abstract

This paper discusses the conditions under which phonology typically described speech in terms of phonological system of a language including an inventory of sounds and their features, and rules which specify how sounds interact with each other with respect to Tulu language, one of the Dravidian languages spoken by the people in the coastal area of states of Karnataka and Kerala.

Keywords: Phonological system, Tulu, inventory, segmental phonemes, consonants, vowels, diphthong, clusters, germination, syllabi structure, inventory

1. Introduction

Tulu is one of the Dravidian languages occupied the fifth position among the major Dravidian languages such as Tamil, Malayalam, Telugu, Kannada and Tulu. Tulu is spoken as the mother tongue by Brahmins, Bunts, Moyilies, Jains, Kurumbaras, Billavas, Harijians, Koragas and others in the coastal area of states of Karnataka and Kerala. As per the census of India 1971, the number of Tulu speakers in India are 11,54,419. Of them, 10,42,865 are in Kerala and 11,58,419 are in Karnataka.

The present paper tries exploring the phonological study of Tulu language. Phonology is defined as the study of sound patterns and the meaning, both within and across language. Phonology is the study of how sounds are organized and used in natural languages in general and Tulu language in particular.

1.1 Inventory (Phonemic Segmental)

The phonological study of a language involves looking at data (phonetic transcriptions of the speech of native speakers) and trying to deduce what the underlying phonemes are and what the sound inventory of the language. The segmental phonemes of Tulu comprise of 12 vowels and 23 consonants. An effort has been made by the researcher to present them with suitable examples.

1.1.1 Vowel Chart

1.1.1.1 Segmental Vowel Phonemes: The segmental vowels in Tulu language are presented below.

1.1.2		Anterior	Central	Posterior
	High	/i/ /i:/	/ɨ/	/u/ /u:/
	Mid	/e/ /e:/	/ə/	/o/ /o:/
	Mid-Low	/ɛ/		
	Low		/a:/	

Consonant Chart

1.1.2.1 Segmental Consonant Phonemes: The segmental consonants attested in Tulu language are presented below.

		Bilabial	Dental	Alveolar	Palatal	Retroflex	Velar
Plosive	Vl	/p/	/t̪/			/ʈ/	/k/
	Vd	/b/	/d̪/			/ɖ/	/g/
Affricate	Vl				/tʃ/		
	Vd				/dʒ/		
Fricative	Vl			/s/	/ʃ/ /ʒ/		/h/
Nasal		/m/		/n/	/ɲ/	/ɳ/	/ŋ/
Approximant		/ʋ/			/j/		
Liquid					/l/	/ɭ/	

* Vl : Voice less: Vd: Voiced

The above mentioned consonants are also sometimes found in Tulu language. As the use of these consonants are mainly found in loan words and borrowed words, the phonemes are not posited in the inventory of the regular phonemes of Tulu language.

2 Diphthongs

A diphthong also known as a gliding vowel is a phonetic sequence, consisting of a vowel and a glide that is interpreted as a single vowel. It refers to two adjacent vowel sounds occurring within the same syllable. Technically the tongue moves from one point of articulation to other during the pronunciation of the vowel.

As per the data collected from the speakers of Tulu language, the diphthongs in Tulu are - /əj/, /jə/, /jɛ/, /ɛj/, /ɔj/ . The occurrences of these diphthongs are realized frequently in medial and final position. The initial occurrence of the diphthong is scanty.

Diphthongs	Initial	Middle	Final
/əj/	/əjnɨ/ 'five'	-------	/kəj/ 'hand'
/jə/	-------	/ɛljə ba:ɭɛ/ 'infant'	-------
/jɛ/	-------	------	/ʤəʋənje/ 'young man'
/ɛj/	-------	-------	/ bɔɭnɛj/ 'butter'

3 Consonant Clusters

A consonant cluster is a group of consonants which have no intervening vowel. The consonant clusters can be a combination of two identical as well as two non-identical consonants that generally occurs in the medial position of a word. The former is called homogenous clusters and the latter is called heterogeneous consonant clusters. The occurrences of the consonant clusters are most frequently in the medial position. A few examples of non-identical clusters are as follows:

/ŋk/ - /mu:ŋku:/   'nose'

/nɖ/ - /məɳɖe:/   'skull'

/ɳʈ/ - /kənʈɛlɨ/   'throat

/ɳʤ/ - /bəɳʤi:/   'abdomen'

/ɭɳ/ - /bɔɭnɛj/   'butter'

/ʈn/ - /ʧəʈni:/   'chutney'

/ɲʧ/ - /muɲʧi:/   'pepper'

/ɾl/ - /kuɾlu:/   'pori'

/sm/ - /a:sma:/   'asthma'

/ɾn/ - /əʤi:ɾna:/   'indigestion'

3.1 Tri-Consonant Clusters

Following are the words attested in Tulu language having tri-consonant clusters.

/sṯṯ/ - /həsṯṯa:/   'palm'

/ɾbb/ - /pəɾbba:/   'festival'

/ɾṯṯ/ - /mu:ɾṯṯi:/   'idol'

/nṯṯ/ - /ɛɖɖɛnṯṯina:/   'good'

/sṯɾ/ - /kəɾə ʋəsṯɾə/   'handkerchief'

4 Consonant Gemination

The following are the example of some geminated (identical consonant clusters) consonants attested in Tulu language.

/-kk-/ - /ʧikkəppa:/	'father's elder brother'	
/-nn-/ - /binnə ɾa:ʃi/	'fraction'	
/-pp-/ - /uppu:/	'salt'	
/-t̪t̪/ - /t̪igət̪t̪ə nɛj/	'honey'	
/-gg-/ - /mɛgge:/	'elder brother'	
/-ɖɖ-/ - /gəɖɖa:/	'beard'	
/-d̪d̪-/ - /məd̪d̪ime:/	'marriage'	
/-ll-/ - /ni:ɾulli: /	'onion'	
/-ɳɳ-/ - /suɳɳa:/	'lime'	
/ -ʈʈ-/ - /nəʈʈinɛj/	'beggar'	
/-ll-/ - /kullu:/	'to sit'	
/dʒdʒ/ - /gədʒdʒi:/	'rashes'	
/ ʧʧ/ - /ʧəppəl ʧuʧʧina:/	'shoe-bite'	
/mm/ - /ɛɾmme:/	'buffalo'	

5 Phonemic Contrasts

A phoneme is the smallest contrastive unit in the sound system of a natural language. A study of minimal pairs in the data collected from the dialect of Tulu language exemplifies the phonemic contrasts available. These are used to demonstrate that two phones constitute two separate phonemes in the language. Examples of phonemic contrasts in Tulu are as follows.

5.1 Contrasts in Vowels

/o:/ ~ /u/	/ko:ɾi:/	'hen'	:	/kuɾi:/	'sheep'
/a:/ ~ /ə/	/ba:ɭɛ/	'kid'	:	/bəlɛ/	'net'
/u:/ ~ /u/	/gu:ɾu:/	'drop'	:	/guɾu:/	'teacher'

5.2 Contrasts in Consonants

/g/ ~ /k/	/go:ɖɛ/	'wall'	:	/ko:ɖe:/	'yesterday'
/k/ ~ /ʧ/	/kukku:/	'mango'	:	/ʧikku:/	'sapota'
/ɲ/ ~ /ɾ/	/pe:ɲɨ/	'louse'	:	/pe:ɾɨ/	'milk'

6 Distribution of Vowel Phonemes

Vowel	Word Initially	Word Medially	Word Finally
/i/	/iɾiʋa:/ 'twenty'	/ədʑippa:/ 'sixty'	/pəḏna:dʑi/ 'sixteen'
/i:/	/i:ɾnə/ 'your'	/bi:ns/ 'beans'	/ṯəʋttɛka:ji:/ 'cucumber'
/e:/	/e:lənɛ/ 'seventh'	/pe:ɾi məlpina:/ 'milkmaid'	/pəŋgəɖe:/ 'pangode'
/o:/	/o:lɨ/ 'where'	/ko:lu:/ 'quiver'	/pɔɳdʑo:/ 'woman'
/ə/	/əɳdʑa:lɨ/ ' Anjel'	/kəmba:/ 'pillar'	/juʋəkə/ 'adult'
/a:/	/a:dʑɨ nu:ḏu:/ 'six hundred'	/ḏra:ksi:/ 'grapes'	/kumbuɖa:/ 'pumpkin'
/u/	/uṉḏɨ/ 'this'	----	----
/u:/	/u:ḏɨ bəṯṯi:/ 'incense stick'	/bu:ṯṯa:ji/ 'gold fish'	/kəɾimbu:/ 'cane'
/ɨ/	/uŋge:l muɳtʃi:/ 'dry chilly'	/gubbi:/ 'sparrow'	/nəʋilɨ/ 'peacock'
/ɛ/	/ɛɾmme:/ 'buffalo'	/bɛḻḻiḻi:/ 'garlic'	/ba:ḻɛ/ 'kid'

7 Distribution Consonantal Phonemes

Consonant	Initial	Medial	Final
/p/	/pa:nəka:/ 'beverage'	/ka:pi: / 'coffee'	**----**
Phoneme /p/ occurs only word initial and medial position not in word final position			
/b/	/biɾe:lɨ / 'finger'	/kɛbi:/ 'ear'	----
Phoneme /b/ occurs only word initial and medial position not in word final position			
/ṯ/	/ṯəɾɛ/ 'head'	/həsṯṯa:/ 'palm'	----
Phoneme /ṯ/ occurs only word initial and medial position not in word final position			
/ḏ/	/ḏəʋəḏɛ/ 'jaw'	/pəɾəḏe:/ 'curtain'	----
Phoneme /ḏ/ occurs only word initial and medial position not in word final position			
/ʈ/	/ʈa:ɾtʃ/ 'torch'	/kəɳʈɛlɨ / 'throat'	----
Phoneme /ʈ/ occurs only word initial and medial position not in word final position			
/ɖ/	----	/muɳɖa:/ 'forehead'	----

Phoneme /ɖ/ occurs only word medial position.			
/k/	/kənɲɨ guɖɖɛ/ 'eyeball'	/pa:nəka:/ 'beverage'	----
Phoneme /k/ occurs only word initial and medial position not in word final position			
/g/	/gədɖa:/ 'beard'	/ugɨru:/ 'nail'	----
Phoneme /g/ occurs only word initial and medial position not in word final position			
/ʃ/	/ʃri: məntte:/ 'rich'	/iʃa:njə/ 'north east'	----
Phoneme /ʃ/ occurs only word initial and medial position not in word final position			
/h/	/ubbub:/ 'eyebrow'	/guhe:/ 'den'	----
Phoneme /h/ occurs only word initial and medial position not in word final position			
/m/	/muɳɖa:/ 'forehead'	/a:sma:/ 'asthma'	----
Phoneme /m/ occurs only word initial and medial position not in word final position			
/n/	/nɛtte:rɨ / 'blood'	/kəkkɨna:/ 'vomit'	----
Phoneme /n/ occurs only word initial and medial position not in word final position			
/s/	/su:ppɨ / 'soup'	/mi:sa:/ 'moustache'	----
Phoneme /s/ occurs only word initial and medial position not in word final position			
/ɲ/	----	/pəttɔɲdʒi/ 'eleven'	----
Phoneme /ɲ / occurs only word medial position not in word initial and final position			
/ɳ/	----	/məɳɖe:/ 'skull'	----
Phoneme /ɳ/ occurs only word medial position.			
/ŋ/	----	/mu:ŋku:/ 'nose'	----
Phoneme /ŋ/ occurs only word medial position			
/l/	/lɛppu:/ 'to call'	/kullu:/ 'to sit'	----
Phoneme /l/ occurs only word initial and medial position not in word final position			
/ɭ/	----	/ga:ɭi:/ 'to blow'	----
Phoneme /ɭ/ occurs only word medial position			
/ʧ/	/ʧo:ɭi/ 'peel'	/məʧʧɛ/ 'mole'	----
Phoneme /ʧ/ occurs only word initial and medial position not in word final position			
/dʒ/	/dʒu:n tɨŋgo:lɨ/ ' June'	/nidʒdʒi:/ 'gum'	----
Phoneme /dʒ/occurs only word initial and medial position not in word final position			
/j/	/juʋəkə/ 'adult'	/məɲiʃja:/ 'man (male)'	/tɨgəttə nɛj/ 'honey'
Phoneme /j/ occurs word initial, medial and in final position			
/ɾ/	/ɾəsa:/ 'juice'	/məle:rija:/ 'malaria'	----
Phoneme /ɾ /occurs only word initial and medial position not in word final position			

8 Allophonic Distribution

An allophone is a phonetic variant of a phoneme in a particular natural language. Although a phoneme's allophones are all alternative pronunciations for a phoneme, the specific allophone selected in a given situation is often predictable. The present data shows the following allophonic variation

Phoneme /n/ has two allophones [ɳ] and [ŋ].

```
                    [ɳ]
              ↗
    n
              ↘
                    [ŋ]
```
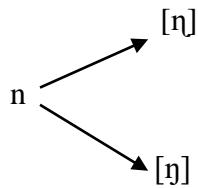
[ŋ] occurs before /k/ or /g/

[ɳ] occurs after or before a retroflex obstruent or in intervocalic position.

Examples:

[ŋ]-	/səjiŋgo:lɨ/	'pestle'
	/əŋgi:/	'dress'
[ɳ]-	/muɳɖa:sɨ/	'turban'
	/kəɳʈi:/	'necklace'

9 Co-articulation

In Co-articulation a conceptually isolated speech sound is influenced or becomes more like, a preceding or following speech sound. This feature can be observed in retroflexion in Tulu language.

Retroflexion is a sound formation process where the presence of a retroflex sound casts its impact on the following sound. This is a common feature in Dravidian languages and Tulu is no exception. Following are the examples.

/miɳɖa:/   'forehead' (after retroflex sound)

/məɳɖe:/   'skull'

/kəɳɖi:/   'window'

/kəɳʈi:/   'necklace'

10 Syllable Structure

A syllable is a unit of sound composed of a central peak of sonority (usually a vowel), and the consonants that cluster around this central peak. Syllables are often considered the phonological "building blocks" of words. They can influence the rhythm of a language, its prosody, its poetic meter and its stress patterns. Syllabification is the separation of a word into syllables, whether spoken or written. In Tulu syllabification has been done as below:

  i. Monosyllabic,

  ii. Disyllabic, and

  iii. Polysyllabic words

10.1 Monosyllabic Pattern

1. CV: - /po:/   'to go'
2. V:CV: - /a:d͡ʒi:/   'six'

10.2 Disyllabic Pattern

1. CV-CV   - /t̪ə-ɾɛ/   'head'
2. CVC –CV   - /mət͡ʃ-t͡ʃɛ/   'mole'
3. V-CV: - /ɛ-d̪e:/   'heart'
4. CVC-CV:CV: - /bɛŋ-ɖo:le:/ 'ear-ring'

10.3 Polysyllabic Pattern

1. CVC-CV-CV   - /kəɳ-ʈɛ-lɨ/   'throat'

2. CV-CVC-CV: - /t̪ə-ɭɛm-bu:/   'pillow'

3. CV-CV-CV   - /kə-pa:-ʈu:/   'almirah'

4. CV:-CV:-CV-CVV   - /bi:-ga:-d̪ə-kəj/ 'key'

5. CCV:-CVC-CV: - /sɾi:-gəɳ-d̪a:/   'sandalwood'

11 Supra-Segmental Feature

Apart from segmental phonemes Tulu also make supra-segmental distinctions in tone and nasality that has already been discussed before. Supra-segmental includes tone, stress and prosody.

12 Nasalization

Nasalization is a way of pronouncing sounds characterized by resonance produced through the nose in course of which the velum is lowered, so that some air escapes through the nose during the production of the sound by the mouth. In   Tulu   nasalization was not occurs in the influence of nasal vowel.

13 Length

Length is phonemically not realized in Tulu language. There is no lengthening variation attested in this language.

14 Conclusion

To sum up, as far as Tulu language is concerned, there are twelve vowels and twenty three consonants in terms of segmental phonemes. Moreover, following are inferred from the phonological study of Tulu language as:

i.   The occurrences of diphthongs are realized frequently in medial and final position of words in Tulu language whereas the initial occurrence of the diphthong is scanty.

ii.   The occurrences of the consonant clusters are most frequently in the medial position.

iii. Geminated (identical consonant clusters) consonants are attested in Tulu language.

iv.   Regarding the distribution of vowel phonemes in terms of Tulu language, the back high shortened vowel /u/ does not occur in medial and final position in the occurrence of word found in Tulu.

v. As for the distribution of consonant phonemes with respect to Tulu language, the phonemes /p/, /b/, /t̪/, /d̪/, /ʈ/, /k/, /g/, /ʃ/, /h/, /m/, /n/, /s/, /l/, /ʧ/, /ʤ/ and /ɾ/ occur in initial and medial position except final position whereas the phoneme /j/ occurs in all three positions.

vi. The phonemes /ɖ/, /ɲ/, /ɳ/, /ŋ/ and /ɭ/ occur in medial position alone in Tulu language.

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