

## Elaborating the Consonant Phonemes in Baluchi Makrani Dialect based on Burquest's Model of Phonology (2001)

### Abstract

The present study aims at elucidating the consonant Phonemes in the Baluchi Makrani Dialect Based on Burquest's model of phonology (2001). The study participants included 40 individuals (25 males and 15 females aged 30 to 80) incapable of reading and writing. Out of the 25 male participants, six were above 70. The field data were collected by recording the participants' free speech and purposively by asking questions, writing, and recording the answers. Most library data are pertinent to epical poems composed by the late Kamalan, an epical-style poet, before his death. The phonological data of the research were mostly obtained by recording the participants' voices in .wav format and exporting them to a computer. The data were then transcribed into word documents, and the required information was extracted. The text data typed in .doc format were subjected to using the Microsoft Word search tab to test phonemic sequences and their frequencies. Spectrograms were utilized to determine the acoustic specifications of consonant phonemes, like being aspirated or voiced or not. The investigations indicated that the dialect has 21 consonants in its phonemic system.

**Keywords:** *consonant phonemes, Baluchi Dialect, phonemic system, Burquest's model of phonology (2001)*

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### Introduction

Although different theories are offered for the investigation and description of the sound units, "phonemics has been considered in all of the linguistic theories as the essential and primary part for the description of a language's structure" (Meshkat Al-Dini, 1985, p.29). Fromkin and Rodman (1988, p.5) believe that "the knowledge of a language's phonology is beyond recognizing its phonetic list. This knowledge incorporates the phone's realization that can take place at the beginning or the ending positions of a word and a sequence". The study of the sound's phonetic properties is the subject of the various phonological branches. Ferdinand De Saussure believed that the sound of a word is, per se, not so much important. Rather, the significant thing is the phonemic contrasts that allow distinguishing the words (B. Elan Dresher, 2009). This means that a phone is recognized not only based on its specifications but also the specifications. It does not have meaning that a sound can be realized by comparing it with the other sounds" (Dresher, 2009, p.1).

Therefore, having perceived the significance of the issue, Trubetzkoy, a founder of Prague School, "endeavored to offer a comprehensive categorization of the phonemic properties through distinguishing contrasts between the vowel and consonant phonemes in different languages. He pays attention to the way /p/ can differ from /b/ and the nature of the disparity in phonemic systems. Hyman (1975) believes that Jakobson and his colleagues innovated by inserting acoustic phonology into phonemics. According to him, another innovation by Jakobson is the transformation of all the phonemic specifications into binary characteristics. It means that every

feature can have only two values; one negative and one positive

Burquest's model of phonology (2001) is one of the works presented in line with offering a proper pattern for describing the languages' phonemic system within the framework of generative phonology and phonemics theory. In this model, the phonemic specifications are first divided into substantial categories, articulation place, articulation method, and laryngeal characteristics. Then, these major groups are per se divided into smaller sets that designate distinctive features based on the phonemes' articulation attributes. Burquest (Ibid) suggests six stages for identifying a language's phonemes. He also illuminates the method of phonemic processes' description, stress, and intonation patterns. Considering the abovementioned materials, the present study aims to elucidate consonant phonemes in Baluchi Makrani Dialect based on Burquest's model of phonology (2001).

### Study's Theoretical Foundation:

#### Speech Sounds:

It is stated that "sound" is not a precise term in phonology and phonemics. Therefore, the phone is applied instead because sound refers to any noise. In contrast, the phone is limited to the sounds produced by humans (Balcytyte-Kurtiniene, 2014). Although it appears that the speech can be shown in the form of separate sequences of units, "radiographic and spectrographic images designate that the speech sounds are not produced in the form of a series of separate units; rather, they are articulated in mixtures" (Schane, 1973, p.3). For example, the term "man" is not produced as/m/-pause-/æ/-pause-/n/. However, "one of the fundamental hypotheses in this regard is that speech is made of separate units. Thus, it can be concluded

that the (phonetic) letters are the smallest units for phonemic analyses” (Ibid).

While a speech sign is physically deemed continuous, it is usually perceived in the form of a series of separate units. “However, it can be claimed that speech can be decomposed into its constituent elements; this is while the speech’s articulation and acoustic aspects recommend the opposite” (Ibid, p.3).

**Phones’ Articulation Categorization System:**

In the articulation categorization system, the place of articulation, the method of articulation, and the presence or absence of a vowel enable the classifications into naturally smaller classes. For instance, the phoneme /p/ can be described based on the specifications above as “bilabial, plosive, and unvoiced”: in this type of categorization system, the phones are seminally divided into two sets of consonants and vowels depending on the obstruction created or not in the air movement path in the vocal tract (see also Manell, 2008 and Ladefoged, 2011).

**Consonants’ Articulation Categorization:**

In the articulation-based categorization system, three essential attributes are taken into account: the place of articulation, the method of articulation, and is voiced or unvoiced.

As for the place of articulation, two concepts should be essentially pointed out, namely active and passive articulation. The latter refers to a part of the vocal tract wherein an obstruction occurs. But, the former refers to a part of the vocal tract that moves towards the obstruction point to create it (Manell, 2008).

The number of consonants’ articulation positions in every language and even dialect might differ. The investigations in this research paper indicated that the consonants of the Baluchi Makrani Dialect are produced in six positions. Therefore, Makrani Dialect’s consonants should be divided in terms of the place of articulation into six natural sets, namely 1) bilabial consonants; 2) dental-alveolar consonants; 3) retroflex (apico-domal) consonants; 4) hard-palatal consonants; 5) soft-palatal consonants; and, 6) glottal consonants.

Regarding the method of articulation, as believed by Carr (1993), the phones’ articulation method is specified based on

the amount of obstruction created in the vocal tract. From his viewpoint, there are generally three kinds of obstruction, as outlined below:

- 1) Completely closed: it happens when the articulators completely shut the air path. The phones produced in this way are called occlusive or plosive sounds.
- 2) Almost closed: it occurs when the articulators get close, but the air path is not completely occluded, and the air is allowed to pass with some friction. The phones produced in this way are termed fricative.
- 3) Nearly open: it takes place when the articulators do not get close to each other to the extent that the air pass be followed by friction. The phones produced in this way are termed glides.

**Study Method:**

The study participants included 40 persons (25 males and 15 females aged 30 to 80), all incapable of reading and writing. Out of the 25 male participants, 6 were above 70 years of age; one of these six men was a rancher, and the other five were farmers. Amongst the other male participants, six were farmers, six were unemployed, one was a rancher, and one was a driver. The female participants interviewed herein were all housekeepers.

The field data were gathered by recording the participants’ free speeches and purposively using questioning and writing the answers. Most of the library data were collected from amongst the epical poems composed by the late Kamalan, the epical-style poet, before his death.

The phonological data of the research were mainly recorded in wav. format and inserted into a computer; then, parts were transcribed and extracted for further analysis. The research data were seminally typed in word format; next, the search section was utilized to determine the phonological sequences and their frequency rates in the compiled lingual body. Spectral diagrams were drawn to determine the acoustic specifications of the consonants, like aspiration and being voiced or not.

**Findings:**

Table (1) respectively presents the consonant sounds extracted from the lingual bodies in Baluchi Makrani Dialect.

Table 1: consonants extracted from the lingual body of Baluchi Makrani Dialect

Place of articulation→		Bilabial	Dental-alveolar	Retroflex	Alveolar-palatal	Palatal	Glottal
<b>Occlusive</b>	Aspirated	/ʰp/	/tʰ/	/tʰ/		/ʰk/	
	Unvoiced	/p/	/t/	/t/		/k/	
	Voiced	/b/	/d/	/ɖ/		/g/	
<b>Fricative</b>	Voiced		/s/		/ʃ/		/h/
	Unvoiced		/z/		/ʒ/		

<b>Affricative</b>	Aspirated			<b>tʰ</b>
	Unvoiced			<b>tʃ</b>
	Voiced			<b>dʒ</b>
<b>Nasal</b>	/m/	/n/		
<b>Trill</b>			/r/	
<b>Flap</b>			/ɾ/	
<b>Lateral</b>			/l/	
<b>Glide</b>	/w/			/j/

The consonant phones extracted from the study data based on Burquest’s model of phonology (2001) can be compared and examined in the following natural sets:

**A) Occlusive Sounds Compared with Similar Consonants:**

- /p<sup>h</sup>/ and /p/: difference in aspiration such as in /p<sup>h</sup>oʊt/ “back” and /ropt/ “swept”
- /p/ and /b/: difference in being voiced or not, such as in /p<sup>h</sup>ɑd/ “foot” and /bɑd/ “sensitivity.”
- /m/ and /b/: difference in being nasal or not, such as in /mort/ “died” and /bort/ “won.”
- /w/ and /b/: differences in the method of articulation, such as in /wɑr/ “humiliated” and /bɑr/ “load.”
- /t/ and /t<sup>h</sup>/: difference in aspiration such as in /t<sup>h</sup>ah/ “you” and /tarh/ “design.”
- /t/ and /d/: difference in being voiced or not, such as in /Kant/ “does” and /kand/ “laugh.”
- /t/ and /t̚/: difference in place of articulation such as in /kɔt̚/ “face” and /kot/ “did”
- /t̚/ and /t<sup>h</sup>/: difference in aspiration such as in /kan̚t̚/ “horn” and /t<sup>h</sup>ɑŋg/ “calf of the leg”
- /t̚/ and /d̚/: difference in being voiced or not, such as in /kɔn̚t̚/ “trunk” and /kɔn̚d̚/ “corner”
- /r/ and /d̚/: differences in the method of articulation such as in /ruek/ “bright” and /d̚uek/ “stone”
- /r/ and /d̚/: differences in the technique of articulation such as in /wa<sup>r</sup>/ “example” and /wa<sup>d̚</sup>/ “share”
- /n/ and /d/: difference in the method of articulation such as in /nɑm/ “name” and /dɑm/ “ranch”
- /k/ and /k<sup>h</sup>/: differences in aspiration such as in /k<sup>h</sup>eʃt/ “planting” and /metk/ “sucked”
- /g/ and /k/: difference in being voiced or not, such as in /wɑk/ “power” and /wɑg/ “rein”
- /ŋ/ and /g/: differences in the method of articulation such as in /wɑŋ/ “dining Table” and /wɑg/ “rein”

**B) Fricatives Compared with Similar Phones:**

- /s/ and /z/: difference in being voiced or not, such as in /sɑr/ “conscious” and /zɑr/ “abject”
- /s/ and /ʃ/: difference in place of articulation such as in /kas/ “person” and /kaʃ/ “waist’s side”
- /ʃ/ and /ʒ/: difference in being voiced or not, such as in /ʃand/ “sandy land” and /ʒand/ “tired”
- /z/ and /ʒ/: difference in place of articulation such as in /bazzag/ “miserable” and /baʒʒag/ “disgusting”

**C) Affricatives Compared with Similar Phones:**

- /tʃ/ and /dʒ/: difference in being voiced or not, such as in /tʃɑr/ “see” and /dʒɑr/ “shout”
- /ʃ/ and /tʃ/: difference in the method of articulation such as in /ʃank/ “thorn” and /tʃank/ “to the size of a fist”
- /ʒ/ and /dʒ/: difference in the method of articulation such as in /baʒʒag/ “disgusting” and /badʒʒag/ “refrain”
- /t/ and /tʃ/: differences in the method of articulation such as in /tat̚k/ “ran” and /tat̚k/ “straight”
- /d/ and /dʒ/: differences in the method of articulation such as in /bued/ “recovering from coma” and /buedʒ/ “opening”

**D) Nasals Compared with Similar Phones:**

- /m/ and /n/: difference in place of articulation such as in /mɑl/ “financial properties” and /nɑl/ “horseshoe”
- /ŋ/ and /m/: difference in the place of articulation such as in /wɑŋ/ “dinging Table” and /wɑm/ “loan”

**E) Comparing Trill /r/ with Similar Consonants:**

- /l/ and /r/: difference in place of articulation such as in /bɑl/ “wing” and /bɑr/ “load”

**F) Laterals Compared with Similar Consonants:**

- /n/ and /l/: differences in the method of articulation such as in /bɑl/ “wing” and /ban/ “room”

**G) Glides Compared with Similar Consonants:**

- /g/ and /w/: differences in the method of articulation such as in /wɑm/ “loan” and /gɑm/ “step”
- /dʒ/ and /j/: difference in the method of articulation, such as in /dʒɑr/ “shout” and /jɑr/ “assistant”
- /w/ and /j/: difference in place of articulation such as in /wɑr/ “humiliated” and /jɑr/ “assistant”

In the above section, similar consonants were compared. The comparison has been conducted in two stages; firstly, the

phones with similarities concerning the place of articulation and the ones with similarities regarding articulation method have been compared.

**A) Comparing the Bilabial Consonants:**

this section shows the bilabial consonants in various positions to prove their phonemic identities.

**Initial position :** /p<sup>h</sup>all/ “fence”, /ball/ “spear”, /mall/ “hero”, /wall/ “boot”

**Middle position:** /sap<sup>h</sup>ɑ/ “clean and tidy”, /sabɑ/ “morning”, /samɑ/ “consciousness”, /sawɑ/ “separate”

**Ending position:** /t<sup>h</sup>ap/ “fever”, /t<sup>h</sup>ab/ “patience”, /t<sup>h</sup>am/ “distance”, /t<sup>h</sup>aw/ “you”

Amongst the minimal pairs presented in above , four phones, namely /p/, /b/, /m/, and /w/, are in contrast with one another. Subsequently, these four phones are considered four distinct phonemes. However, the two phones, /p/ and /p<sup>h</sup>/, are not in such a relationship; rather, they are in supplementary distribution concerning one another; thus, it can be stated that these two are two kinds of phonemes.

**B) Comparing the Dental-Alveolar Consonants:**

**Initial position:** /t<sup>h</sup>ɑr/ “dark”, /dɑr/ “stick”, /sɑr/ “conscious”, /zɑr/ “shouting and grieving”, /nɑr/ “mourning

**Middle position:** /k<sup>h</sup>ot<sup>h</sup>ag/ “has done”, /k<sup>h</sup>odag/ “stimulated”, /gasag/ “biting”, /ɑzag/ “annoyed”, /galag/ “group”, /janag/ “hitting”

**Ending position:** /phɑt/ “a type of mat made of reed

- /p<sup>h</sup>ɑd/ “foot”
- /p<sup>h</sup>ɑs/ “a part of the night
- /p<sup>h</sup>ɑn/
- /p<sup>h</sup>ɑr/
- /p<sup>h</sup>ɑl/
- /dɑs/
- /dɑz/

In the minimal pairs presented in above ,seven phones, namely /t/, /d/, /s/, /z/, /n/, /r/, and /l/, are in contrast with one another hence they are envisioned as seven distinct phonemes. However, the two phones, /t/ and /t<sup>h</sup>/, are not in such a relationship, and it appears they are in a supplementary distribution concerning one another.

**C) Comparing Retroflex (Apico-Domal) Consonants:**

**Initial position:** /ɖong/ “imprudent”

- /t<sup>h</sup>ong/ “hole”
- /ɖɑl/ “vulture”
- /t<sup>h</sup>ɑl/ “branch”

**Middle position:** /k<sup>h</sup>arabb/ “corn”

/k<sup>h</sup>ɑɖɑl/ “tick”

/k<sup>h</sup>ɑrɑk/ “cockroach”

/k<sup>h</sup>ɑtɑk/ “stone-made wall”

**Ending position:** /waɖɖ/ “plain grassy land”

/wɑtt/ “burner”

/wɑr/ “sTable for animals”

In the minimal pairs given in above (8), phone /t/ is in contrast with two phones /r/ and /ɖ/, whereas the two phones /ɖ/ and /r/ or /t/ and /t<sup>h</sup>/ are not in such a relationship with one another hence /t/ and /ɖ/ can be considered as two independent phonemes. However, it seems that the two phone pairs of /ɖ/ and /r/ and /t/ and /t<sup>h</sup>/ are in supplementary distribution concerning one another.

**D) Comparing Hard-Palatal Phones:** Table (9) compares the hard-palatal phones to prove their phonemic identities.

**Initial position:** /tʃanɖ/ “shake”

/dʒanɖ/ “shabby”

/tʃand/ “bedrock”

/ʒand/ “tired”

**Middle position:** /kaʃʃag/ “pull”

/kadʒdʒag/ “hold”

/badʒsʒag/ “refrain”

/batʃʃag/ “being rescued”

**Ending position:** /batʃʃ/ “boy or son”

/badʒdʒ/ “withdraw”

/baʃʃ/ “monsoonal rain”

/baʒʒ/ “disgusting”

In the minimal pairs given in above , five phones, namely /j/, /ʃ/, /ʒ/, /tʃ/, and /dʒ/, are in contrast with one another; hence these five phones are considered five distinct phonemes.

**Comparing Soft-Palatal Consonants with One Another:**

**Initial position:** /gɑr/ “invisible”

/k<sup>h</sup>ɑr/ “job”

/wɑr/ “humiliated”

/k<sup>h</sup>ajl/ “gauge”

/wajl/ “free”

**Middle position:** /laŋk<sup>h</sup>ok/ “finger”

/laŋgok/ “lame”

/sak<sup>h</sup>ok/ “a type of wild vegeTable”

/sagok/ “small dog”

**Ending position:** /wɑg/ “rein”

/wɑk/ “power and stamina”

/wɑŋg/

/t<sup>h</sup>ag/ “leap”

/t<sup>h</sup>aw/ “you”  
 /t<sup>h</sup>ak/ “alone”

In the minimal pairs given in above, three phones, namely /k/, /g/, and /w/, are in contrast with one another; hence they can be considered as three independent phonemes. However, the phones /k/ and /k<sup>h</sup>/ are not in such a relationship and are in complementary distribution concerning one another.

**Comparing Similar Consonants in Terms of Method of Articulation:**

In this section, the consonants extracted from the lingual body herein have been compared according to their articulation methods.

**A) Comparison of the Occlusive Phones: Initial position: /p<sup>h</sup>orr/ “full”**

- /bora/ “face” or “look”
- /k<sup>h</sup>orr/ “baby animal”
- /gorr/ “throat”
- /t<sup>h</sup>orr/ “rotation”
- /dorr/ “pearl”
- /p<sup>h</sup>oll/ “flower”
- /boll/ “crest”
- /t<sup>h</sup>oll/ “mating”
- /t<sup>h</sup>oll/ “peak”
- /k<sup>h</sup>oll/ “house”
- /goll/ “species”

**Middle position: /sap<sup>h</sup>ɑ/ “clean and tidy”**

- /sab<sup>h</sup>ɑ/ “morning”
- /.pakk<sup>h</sup>ɑ/ “correct”
- /pagg<sup>h</sup>ɑ/ “dawn”

- /sat<sup>h</sup>ɑ/ “description”
- /sad<sup>h</sup>ɑ/ “sound”
- Ending position: /sɑp/ “soft”**
- /sɑb/ “account”
- /sakk/ “hard”
- /sagg/ “toleration”
- /sa<sup>tt</sup>/ “transaction”
- /sa<sup>dd</sup>/ “a hundred”
- /ga<sup>tt</sup>/ “blocked”
- /ga<sup>dd</sup>/ “ewe”
- /gap/ “conversation”
- /gabb/ “sprout”
- /wa<sup>tt</sup>/ “burner”
- /wa<sup>dd</sup>/ “desert”

The data in above indicate the eight occlusive consonants, namely, /g/, /k/, /d/, /t/, /d/, /t/, /b/, and /p/, are in contrast with one another. Thus, these phones should be viewed as eight independent phonemes. However, four of these phones, namely /k<sup>h</sup>/, /h/, /t<sup>h</sup>/, and /p<sup>h</sup>/, do not have minimal pairs; hence they are in complementary distribution with respect to one another. Therefore, based on the section’s investigations, Baluchi Makrani Dialect has eight occlusive phonemes, including two bilabial phonemes of /b/ and /p/, two dental phonemes of /t/ and /d/, two retroflex phonemes of /t̪/ and /d̪/ and two palatal phonemes of /k/ and /g/. Table (2) presents the distinctive features of these eight phonemes.

Table 2: distinctive features of the occlusive consonants

Phone	Main category's specifications			Articulation position specifications						Articulation method's specifications					Laryngeal specifications		
	Syllabic	Consonance	Resonance	posterior	Laminal	Anterior	Raised	Lowered	Nasal	Continuous	Rounded	Sharp	Lateral	Advanced tongue root	Vowel	Expanded	Closed
/p/	-	+	-	+	-	-	0	0	-	-	-	-	-	0	-	+	-
/b/	-	+	-	+	-	-	0	0	-	-	-	-	-	0	+	-	-
/t/	-	+	-	+	+	-	0	0	-	-	-	-	-	0	-	+	-
/d/	-	+	-	+	+	-	0	0	-	-	-	-	-	0	+	-	-

/t/	-	+	-	+	+	-	0	0	-	-	-	-	-	0	-	+	-
/d/	-	+	-	+	+	-	0	0	-	-	-	-	-	0	+	-	-
/k/	-	+	-	-	-	+	0	0	-	-	-	-	-	0	-	+	-
/g/	-	+	-	-	-	+	0	0	-	-	-	-	-	0	+	-	-

On the other hand, in acoustic analysis, the occlusive phones' differential recognition can be done using spectrograms based on the silence before articulating these phones. Ladefoged (2011, p.179) believes that "each of the occlusive phones expresses its quality through the effect it exerts on the adjacent vowel." He states: "in the course of articulating vowels like /a/, there are formants that reflect the shape of the vocal tract. Therefore, these formants can be seen as soon as the lips open for articulating syllables like /ba/. The lips closing causes these formants to be produced in a lower position. Hence, syllables like /ba/ start with low formants, and after the lips are opened, leaps are created toward their articulation positions for the vowel /a/ production.

**B) Comparing Fricative Phones with One Another:  
Initial position: /sakk/ "hard"**

- /zakk/ "not ripen"
- /jakk/ "doubt"
- /hakk/ "right"
- /sapt/ "basket"
- /zapt/ "astringent"
- /hapt/ "seven"
- Middle position:** /dast/ "hand"
- /daʃt/ "grassy land"
- /hast/ "is"
- /haʃt/ "eight"
- /bazzag/ "miserable"
- /baʒʒg/ "disgusting"
- /soht/ "confused"
- /sost/ "loose and unable"
- Ending position:** /k<sup>h</sup>as/ "person"
- /k<sup>h</sup>aʃ/ "side of the waist"

/k<sup>h</sup>ah/ "straw"

Amongst the minimal pairs given in above, consonants /s/, /z/, /ʃ/, /ʒ/, and /h/ are in contrast with one another; hence they can be considered as four independent phonemes. The differential recognition of fricative phones can be done through spectrograms based on alternative noises, especially in highly frequent regions.

**C) Comparing the Glottal Consonant /h/ with Similar Consonants: Initial position: /hɔn/ "khan"**

- /ʃɔn/ "glory"
- /hɔm/ "raw"
- /ʃɔm/ "dinner"
- Middle position:** /kahag/ "itch"
- /kaʃag/ "corner"
- /gahag/ "rot"
- /gaʃag/ "deform"
- Ending position:**
- /mɔh/ "the moon"
- /mɔʃ/ "mung bean"
- /rɔʃ/ "bark"
- /rɔh/ "road"

In the minimal pairs shown in above, the two phones, /ʃ/ and /h/, are in contrast, so these two phones can be considered as two independent phonemes. Therefore, the investigations performed in this section indicate that the Baluchi Makrani dialect has five fricative phonemes, including two alveolar phonemes, /s/ and /z/, two palatal phonemes /ʃ/ and /ʒ/, and a glottal phoneme /h/.

Table 3: distinctive features of fricative consonants

Phone	Main category's specifications	Articulation position specifications	Articulation method's specifications	Laryngeal specifications

	Syllabic	Consonance	Resonance	posterior	Laminal	Anterior	Raised	Lowered	Nasal	Continuous	Rounded	Sharp	Lateral	Advanced tongue root	Vowel	Expanded	Closed
/s/	-	+	-	+	+	-	0	0	-	+	-	-	-	0	-	+	-
/z/	-	+	-	+	+	-	0	0	-	+	-	-	-	0	+	-	-
/ʃ/	-	+	-	-	+	-	0	0	-	+	-	+	-	0	-	-	-
/ʒ/	-	+	-	-	+	-	0	0	-	+	-	+	-	0	+	-	-
/h/	-	+	-	-	-	+	0	0	-	-	-	-	-	0	-	+	-

**D) Comparing Affricative Consonants with Similar Phones**  
Initial position: /ʃuen/ “path”

/gaʃ/ “deformed”

/dʒuen/ “corpse”

/tʃuen/ “how”

/dʒakk/ “cough”

/tʃakk/ “on top of”

/ʃakk/ “doubt”

**Middle position:** /pʃtʃag/ “peeling”

/pʃag/ “spraying”

/badʒdʒag/ “withdrawing”

/batʃtʃag/ “being rescued”

/baʒʒag/ “resenting”

**Ending position:** /ganʃ/ “rubbish”

/gandʒ/ “treasure”

/gatʃtʃ/ “chalk”

/gadʒdʒ/ “floor”

/gaʒʒ/ “inflammation”

Amongst the minimal pairs in above, the two phones, /tʃ/ and /dʒ/, are in contrast with one another and with similar consonants; hence they can be considered as two independent phonemes.

Differential recognition of this set of phones is possible using spectrograms based on the silence at the beginning of articulation (of, saying, affricatives) and the noise that is subsequently made, such as in fricatives in this way that, as seen in the spectrograms, the vocal tract holds a quiet position in the beginning when articulating /tʃ/ which is followed by a noise in the form of /ʃ/. When articulating /dʒ/, a low-energy pause is followed by noise, as seen in the production of /dʒ/.

The investigation of the lingual data in this section indicated that Baluchi Makrani Dialect has two affricative phonemes, namely /tʃ/ and /dʒ/.

Table 4: distinctive features of the affricative consonants

Phone	Main category's specifications		Articulation position specifications				Articulation method's specifications				Laryngeal specifications						
	Syllabic	Consonance	Resonance	posterior	Laminal	Anterior	Raised	Lowered	Nasal	Continuous	Rounded	Sharp	Lateral	Advanced tongue root	Vowel	Expanded	Closed
/tʃ/	-	+	-	-	+	-	0	0	-	-	-	+	-	0	-	+	-
/dʒ/	-	+	-	-	+	-	0	0	-	-	-	+	-	0	+	-	-

E) Comparing Three Nasal Phones /n/, /m/, and /ŋ/:

Initial position: /nɒl/ “horseshoe”

/raŋg/ “color”

/naŋg/ “stigma”

/mɒl/ “financial properties”

/nas/ “flaw”

/mas/ “ink”

Middle position: /samɒl/ “intelligence”

/sanɒl/ “description”

/kemɒr/ “attention”

/kenɒr/ “corner”

Ending position: /mann/ “confession”

/mamm/ “bear”

Amongst the minimal pairs given in above, the two phones, /m/ and /n/, are in contrast with one another. Therefore, they can be considered two independent phonemes. The formants in the nasal phones’ spectrograms are similar to vowels but less accentuated. In this set of phones, the formants’ transmission towards vowels is relatively fast.

The investigations of the lingual data and the corresponding spectrograms in this section indicate that Baluchi Makrani Dialect has two nasal phonemes, /m/ and /n/.

Table 5: distinctive features of nasal consonants

Phone	Main category’ s			Articulation position					Articulation method’ s					Laryngeal specifications			
	Syllabic	Consonance	Resonance	posterior	Laminal	Anterior	Raised	Lowered	Nasal	Continuous	Rounded	Sharp	Lateral	Advanced tongue root	Vowel	Expanded	Closed
/m/	-	+	+	+	-	-	0	0	+	-	-	-	-	0	+	-	-
/n/	-	+	+	+	+	-	0	0	+	-	-	-	-	0	+	-	-

Comparing the Glides with Similar Phones: Initial

position: /jɒr/ “assistant”

/wɒr/ “humiliated”

/jɒd/ “memory”

/wɒd/ “salt”

Middle position: /sawɒd/ “literacy”, /sajɒd/ “hunter”

Ending position: /hajr/ “no”

/hawr/ “rain”

/haj/ “alas”

/haw/ “yes”

phonemes. As seen in the spectrograms of this set of phones, the formants are like vowels but a little weaker (especially in high-frequency regions). Amongst them, F1 is nearly 250Hz, F2 about 1200Hz, and F3 is about 2400Hz.

The investigation of the lingual data in this section indicated that the Baluchi Makrani Dialect has two gliding phonemes, named /w/ and /j/.

The investigations indicated that Baluchi Makrani Dialect has 21 consonant phonemes. These phonemes have been presented in Table (6), with the difference being that the phones with no phonemic role have not been inserted therein.

Amongst the minimal pairs in above, the two phones, /w/ and /j/, are in contrast, so they can be considered two independent

Table 6: consonant phonemes of Baluchi Makrani Dialect

Place of articulation →	Bilabial	Alveolar	Retroflex	Alveolar-palatal	Palatal	Glottal
Method of articulation ↓						
Occlusive Unvoiced	/p/	/t/	/ʈ/		/k/	

	Voiced	/b/	/d/	<b>/d̤/</b>	/g/
<b>Fricative</b>	Unvoiced		/s/		/h/
	Voiced		/z/	<b>/ʒ/</b>	
<b>Affricative</b>	Unvoiced			/tʃ/	
	Voiced			<b>/dʒ/</b>	
<b>Nasal</b>	Voiced	/m/	/n/		
<b>Trill</b>	Voiced		/r/		
<b>Lateral</b>	Voiced		/l/		
<b>Glide</b>	Voiced	/w/			/j/

**Conclusion:**

The present study aimed to elucidate the consonant phonemes in the Baluchi Makrani Dialect based on Burquest’s model of phonology (2001). The investigations indicated that the dialect has 21 consonants in its phonemic system. Therefore, based on Burquest’s model of phonology (2001) and considering the distinctive features, the consonant phonemes of the Baluchi Makrani Dialect can be summarized as shown in Table (7).

has 21 consonants in its phonemic system. Therefore, based on Burquest’s model of phonology (2001) and considering the distinctive features, the consonant phonemes of the Baluchi Makrani Dialect can be summarized as shown in Table (7).

Table 7: distinctive features of consonant phonemes in Baluchi Makrani Dialect

Phone	Main category's specifications			Articulation position specifications					Articulation method's specifications					Laryngeal specifications			
	Syllabic	Consonance	Resonance	posterior	Laminal	Anterior	Raised	Lowered	Nasal	Continuous	Rounded	Sharp	Lateral	Advanced tongue root	Vowel	Expanded	Closed
/p/	-	+	-	+	-	-	0	0	-	-	-	-	-	0	-	+	-
/b/	-	+	-	+	-	-	0	0	-	-	-	-	-	0	+	-	-
/t/	-	+	-	+	+	-	0	0	-	-	-	-	-	0	-	+	-
/d/	-	+	-	+	+	-	0	0	-	-	-	-	-	0	+	-	-
<b>/t̤/</b>	-	+	-	+	+	-	0	0	-	-	-	-	-	0	-	+	-
<b>/d̤/</b>	-	+	-	+	+	-	0	0	-	-	-	-	-	0	+	-	-
/k/	-	+	-	-	+	+	0	0	-	-	-	-	-	0	-	+	-
/g/	-	+	-	-	-	+	0	0	-	-	-	-	-	0	+	-	-
/tʃ/	-	+	-	-	-	+	0	0	-	-	-	+	-	0	-	+	-
<b>/dʒ/</b>	-	+	-	-	+	+	0	0	-	-	-	+	-	0	+	-	-
/s/	-	+	-	+	+	-	0	0	-	+	-	+	-	0	-	+	-
/z/	-	+	-	+	+	-	0	0	-	+	-	-	-	0	+	-	-
/j/	-	+	-	-	+	-	0	0	-	+	-	+	-	0	-	+	-
<b>ʒ</b>	-	+	-	-	+	-	0	0	-	+	-	+	-	0	+	-	-
/h/	-	+	-	-	-	+	0	0	-	+	-	-	-	0	-	-	-

/m/	-	+	+	+	-	-	0	0	+	-	-	-	-	0	+	-	-
/n/	-	+	+	+	+	-	0	0	+	-	-	-	-	0	+	-	-
/l/	-	+	+	+	+	-	0	0	-	+	-	-	+	0	+	-	-
/r/	-	+	+	+	+	-	0	0	-	+	-	-	-	0	+	-	-
/w/	-	+	+	-	-	+	0	0	-	+	+	-	-	0	+	-	-
/j/	-	+	+	-	-	-	0	0	-	+	-	-	-	0	+	-	-

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