Preliminaries on the Structural Aspects of A Spoken Variety: A case Study

Ouahmiche Ghania
University of Oran-Algeria
ghaniaouahmiche@yahoo.fr

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Abstract: *This paper presents the various features of the phonetic/phonemic structures of the system of Tiaret Spoken Arabic, TRT. Although we are not concerned here by the historical development that characterises this variety, the history of population contact and diffusion that underlies TRT is of a matter of interest since it allows us to get some linguistic data. The section on the segmental aspect of TRT, as its title implies, covers mainly the phonetic/phonemic inventories of TRT. It also examines some phonological processes such as vowel lowering and vowel centralisation in addition to the phonotactic constraints.*
Keywords: *Tiaret Spoken Arabic, vowel system, syllable structure, phonotactic constraints.*
Résumé : *Cet article présente les différentes caractéristiques des structures phonétiques/phonémiques du système de parler de Tiaret, TRT. Bien que nous ne nous intéressons pas ici au développement historique qui caractérise cette variété, l'histoire du contact et de la mobilité des populations qui sous-tend le parler TRT est intéressante car elle permet d'obtenir quelques données linguistiques. La section sur l'aspect segmentaire de la variété de TRT, comme son titre l'indique, couvre principalement les inventaires phonétiques/phonémiques de cette variété. Elle examine également certains processus phonologiques tels que l'emphatisation et la centralisation des voyelles ainsi que contraintes phonotactiques.*
Mots clés : *Parler de Tiaret, système vocalique, structure syllabique, contraintes phonotactiques.*

1. On the Dialect

1.1. Historical Backgrounds

A review of available literature[1] on the history of Tiaret suggests that the town was founded in 761 AD by a small group of people led by Abderrahman Ben

[1] Canal, J. (1899) "Tiaret, Monographie Ancienne et Moderne", In langue et Société. (1900), pp.1, 44.
Bourouba, R. (1975) " Tiaret à l'époque Rostemide", In Algerie Actualité N° 495.

Corresponding author : Ouahmiche Ghania

Rostom, a religious chief of Persian origin. However, there is confusion in the received history of Tiaret.

El Bekri[2] distinguishes between Old Tiaret, founded by Ukba Ben Nafi' and destroyed by the Romans; and New Tahart founded by the Rostemids. The truth lies somewhere in between. The question raised is what is the origin of the word Tihert? Is it the name of the Roman city "Tingartia" or the Berber Tihert?

It seems that the name of the town derives from Berber. According to Mac Carthy (in Canal, 1899) Tihert originates from a Berber word which means "station". For Reclus, it signifies "residence". What supports Mac Carthy' s point of view is *"Tahort l'ancienne, ou la haute, n'est autre que Tihert. Entre elle et Tahort la neuve (Tagdemt) il y a une station. C'est à dire, un jour de marche"* (Canal, 1899, pp.7). According to its geographical position, Tihert presented an important cross-roads of passage from West to East and from North to South. Furthermore, it was a market place of traders where great transactions between the nomads of the South and the merchants of the Tell took place. Tihert attracted so many people, not exclusively from Muslim countries because it was an intellectual shelter with large reputation for its centres of teaching theology, grammar, mathematics and astronomy.

The entire reign of Tihert was spent in quelling disturbances between Arabs and Berbers. The military revolution of the Berber tribes Zenata and Ketama in (958 AD) has irrevocably changed the course of its history. It left deep social and linguistic effects reflected in social resentments and language attitudes. Under the reign of the Fatimides and the Ibadites, the cultural and political prosperity of Tiaret began to break down and finally it sank into anonymity during the reign of the Ottomans. The languages of the various conquerors that occupied Tiaret (Spanish, Turkish and French) stirred up its linguistic system and left outstanding traces shaped in the form of loan words.

1.2. Dialect Boundaries

Our current work has been carried out in Tiaret, a rural area situated in the Western part of Algeria. It is a rich area for study of variation and language change since its (sub-) varieties appear to be clearly distinguishable and absolutely different from the variety spoken in the centre as a major dialect in spite of geographical proximity. It can be divided rather into four dialectal areas on the basis of linguistic mainly phonetic and lexical considerations (see map pp.). Nearly all speech interactions lie through the centre of Tiaret. Sougeur (SGR) stands at the Southern corner. Ksar chellala (KSRC) and Frenda (FRND) at the Eastern and Western corners, respectively. Apart from these place areas, we are also interested in the speech of the population scattered relatively across the countryside.

[2] El Bekri, C. (1957) "Le Kharidjisme Bèrbère", Extraits des Annales de l'institut d'études Orientales. IXV, Alger.

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2. Dialect Classification

Every variety has its peculiar characteristics which permit its assignment to a particular group. In order to distinguish between rural and urban varieties, only a restricted number of properly distinctive features, some phonetic and morphological, have been proposed by Cohen (1970). Rural varieties are characterised by the preservation of diphthongs which are realised as long vowels in urban varieties, [u:] for underlying /aw/ and [i:] for underlying /aj/.

Another line of demarcation is the retention of the interdentals /ɵ/, /ð/ and the emphatic /ɖ/ in rural varieties as opposed to their replacement by /t/, /d/ and /D/ in urban varieties. At the phonological level, both varieties undergo vowel drop processes as a result of a syncope rule, where short vowels are dropped in unstressed open syllables $ CV $.

Morphologically, unlike urban varieties, rural varieties keep the dual marker which is limited to parts of the body and measurements, as in: [ʕajna: n] "two eyes", [mitra: n] "two meters". Defective verbs lose their third radical in the conjugation in rural varieties. However, they behave as regular verbs at the surface level in urban varieties for they are realised as long vowels, as in: the root <l q j > "idea of meeting"; is conjugated as [lqi:t] in urban varieties and [lqajt] in rural varieties. The application of these parameters to TRT shows that the latter is closer to a rural variety more than to an urban one.

3. The Segmental Analysis of TRT

3.1.The Consonantal System

Through the analysis of our corpus, we have noticed that TRT is phonologically conservative. It almost preserves most of the sounds of Cl. Ar, especially the interdental fricatives /ɵ/, /ð/ and the emphatic / ɖ /, as in:

(3)	/ɡaffaɖ+ t /	→[ɡɑffɖɑt]	"she cleaned out"
	/maɖ rab /	→[mɑɖɾɑb]	"place"
	/ taɵaaʔaba /	→[t ɵæ:wub]	"he yawned"
	/muʕaɵɵal/	→[mʕaɵɵəl]	"Vigurous"
	/ maðwud /	→ [məðwud]	"trough"
	/ ðarwa /	→[ðərwa]	"hump"

The voiced velar /ɡ/ appears to split from the underlying uvular / q /. This can be an instance of what Hoeingswald (1960: 91) refers to as secondary split and Jackobson (1972) as phonologisation, as in:

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(4) / qarwi / "a weight for measurement"
/ ɢarwi / "knife"
/ waqfs / "summons before the court"
/ waɢfa / "allurement, composure "
/ qamquum / "a powerful person" (10)
/ ɢæmɢuum / "nose"
/qarqar / "he gurgled"
/ ɢærɢær / " he giggled"

The velar /ɢ/ surfaces as a contextual variant of /q/ in other structural environments. Consider:

(5) / qammaar / → [ɢamma: ɾ] "cold"
/ qarwud / → [ɢərwud] "he chatted"

The data at hand that the phoneme /ɢ / is by far the most widely used. However, there a tendency among women more likely than other groups to use the variant q instead of ɢ. /ɢ/ is no longer realised as [ɢ] in the word [ɢallab] "he turned ", it has been substituted by [q].Subsequently, other lexical items such as /jaɢrab/, /ɖajjaɢ/, /ʈallaɢ/ have been scaled down in the same way. They are realised [jəqrəb], [ɖejjaq] and [təllaq], respectively. This q~ɢ variation may spread gradually. Nevertheless, its cumulative effect may be significant over time.

The palato-alveolar [tʃ] appears in a number of words but its substitution by [ʃ] does not bring any phonemic contrast, as in:

(6) [tʃartʃi:χ] "flux of water"
[tʃartʃi: fa] "lace"
[fartʃaχ] "he ground"
[tʃaʏnan] "he mumbled"

TRT displays three underlying emphatics /ʈ,ɖ, ʂ / with a number of pseudo-emphatics among them the liquid [ɭ, ɾ] , the uvular / q / and the low back vowel /a /. Below are some examples:

(7) / m+ɢarɖam/→ [mɢaɾɖam] "talkative" (m.s)
/ manʂab/ → [maʂab] "trivet"

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/farʂaaʈa/ → [fɑɾʂɑ:ʈɑ] "blanket"
/qarbaʕ/ → [qɑrbæʕ] "he made noise"
/lamba/ → [ɭɑmba] "bulb"
/ramaja+aat/ → [ɾma:t] "she cooked"

In the above examples, the adjacent segments to /ʈ,ʂ,ɖ/ are emphaticised . Whereas, in the vicinity of the uvular / q /, they behave differently. /q / exerts a co-articulatory backing effect[3] on vowels only. In / qarbaʕ /, for example, emphasis does not spread beyond a $ CV $ sequence.

The liquid /r /is realised as a front [r] or as a back [ɾ] depending on the type of vowel alternation involved . When the morphosyntactic vowel alternation is /i// → /a/ , this change seems to take place automatically, as in :

Vowel alternation: / i/ → / a /
/ sɤiir / → / sɤaar / "small" (m.plur)
[sɤi: r] → [sɤa:ɾ]

In [sɤi: r], the liquid / r / receives a fronting effect induced by the high front vowel /i / which normally becomes [e] in the context of a true emphatic. However, in [sɤa:ɾ] the phoneme / r / is the conditioning factor for /r / to behave as an emphatic –like consonant, as in:

(8) / riita / → [ri: ta] "he stopped"
/ razza / → [ɾazza] "door-latch"

Although TRT has preserved the spirants and emphatic segments, some other sound shifts can be noticed such as the substitution of the palato-alveolar fricative / ʒ / by the affricate[dʒ] .The uvular /q / by the voiceless stop [k] and the fricative /f / by the bilabial fricative [β], as in:

(9) /ʒaaʔiʕ/ → [dʒiʕæ:n] "hungry" (m.s)
/ qasiir / → [ksi:r] " small" (m.s)
/ rafad / → [rβəd] " he carried away"

[3] For more details about emphasis and co-articulatory effect, see: Bouhadiba, F. (1988) "Aspects of Algerian Arabic Verb Phonology and Morphology" (Unpublished Ph.D. thesis), University of Reading, England.

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/ daffaɡ / → [dəβββəɡ] "he poured"

The palato-alveolar affricate [dʒ] is very productive in this system .But, it appears as [ʒ] in a very restricted amount of vocabulary. It is realised [ʒ] in the vicinity of the dental stop / d / or in some loan words:

(10) / ʒadiid / → [ʒdi:d] "new" (m.s)
/ ʒadaq / → [ʒdəɡ] "a small piece of bread"
(Fr) / degʁesaʒ / → [diɡreʂɑ:ʒ] "cutback"

Some words exhibit another striking sound shift which is the realisation of / ɵ / as [f] (11). Some speakers may use the following forms:

(11) / fahima / → [ɵhæm] " he understood"
/ faħmun/ → [ɵħæm] "charcoal"

In terms of phonological space[4], this only means that there is a change in the feature specification of the fricative /f/. Whereas, this subtle change has an effect on the internal structure of the system of TRT as a whole. These sporadic changes; however, are not applied to every occurrence of /f / by [ɵ].

Although a similar change is also noticed for /ɵ/ (12), it would be rare or non-existent in [ɵəldʒ] which has the same phonetic environment for / ɵ / (i.e., initial position). This case in turn does not illustrate a context-sensitive development.

(12) / ɵamma / → [fəmma] "there"
/ ɵaani / → [ɵæ:ni] "also"

Yet, the sound shift ɵ → f is not frequently encountered. The [ɵ] variable emerges in Tiaret because of the sudden flee of a group of people from the adjacent areas of the countryside into the centre. In addition, this phonetic feature is often noted and frowned upon by the speakers of TRT. After this inclusive sketch of the consonants of the variety being investigated, the following table the consonantal system of TRT.

[4] In terms of the concept of phonological space phonological change is viewed as change in the feature specification of phonemes. The minimum change will be that of a single feature, either in the structure of a single segment or of a series of features defined by one or more shared feature. (Theodora Bynon, 1993).

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	labial	**Labio-dental**	**Inter-dental**	**alveolar**	**Palato-alveolar**	**palatal**	**velar**	**Uvularl**	**pharyngeal**	**glottal**
stop	b			t-d			k-g	q		
fricative		f		s-z	ʃ-ʒ		χ-ɣ		ħ-ʕ	h
emphatic			ʈ-ɖ	ʂ						
nasal	m			n						
liquid				l-r						
glide	w					j				

The above table exhibits noticeable gaps as a number of segments stand on their own. As such, the phonemic inventory of TRT lacks pattern congruity[5].

3.2.The Vowel System of TRT

Language contact constitutes a very important factor of phonological change. The evolution of certain sounds or segments in this system is primarily due to the introduction of a large number of loan words.

Out of contact with other languages, TRT has developed a complex and flexible phonetic system. One of the environments where noticeable changes have taken place is the vowel system. The merging of the low front vowel / æ /, as opposed to the low back vowel /a / may be related to the presence of loan words .This can only mean that the fronting which was merely a redundant feature of the vowel /a / becomes a distinctive feature opposing / æ / to /a/ can be established in this variety, as in:

[5] Since the segment /ʃ / occupies the farthest position in final three consonant clusters, we give this segment an arbitrary index of 0.3 on the basis of its distribution .It would be interesting to mention here that final $ ccc # # is the result of the combination of verbs ending in two clusters to which /ʃ / is attached .This / ʃ/ forms part of the negative marker {maa…..ʃ } , as in : /maa + daxal + tʃ / → [mædχlltʃ] " I didn't come in".

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	/ jbaari /	→ [jbɑːɾi]	" he crosses out"
	/ jbæ æ ri /	→ [jbæːri]	" needles"
(fr)	/ kanõ /	→ [kɑːnu]	"lock"
	/ kæ æ nu /	→ [kæːnu]	"they were"

Thus, TRT displays a rectangular vowel system which consists of four short vowels /i/, /a/ , /u/ and /æ/.

3.3.Some Vowel Processes

3.3.1. Vowel Lowering

The short vowels /i , a , æ , u / are respectively lowered into [e,ɑ, o] in the environment of underlying emphatics :

(14) / χlaʈ / → [χlɑʈ] "he arrived"
/ ʈriiɡ / → [ʈɾeːɡ] "road"
/ ɖulm / → [ɖolm] "injustice"

3.3.2. Vowel Centralisation

One of the most important phonological processes that operate in this variety is the process of vowel centralisation (or Imaala) , whereby the short vowels /i, a, æ, u/ are reduced to the short central open unrounded vowel [ə] in the environment cvc(c) .Below are the following examples .

(15) / qirba / → [ɡərba] "water skin" < cl.Ar
/ babbuuʃ/ → [bəbbuːʃ] " periwinkle" < Berber
/bunduq / → [bəndaq] "walnut < Cl.Ar

3.3.3. Diphthongs and Glides

TRT is characterises by the conservation of some features that normally are expected to be lost when compared to other varieties. The diphthongs are usually realised at the surface level as long vowels whereas in TRT, we have scored some words preserving the glides /aw/ and /aj/.

(16) [ɖɑjf] "guest"
[ħɑjf] "ceremony"
[ħɑjʈ] "wall"

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[bɑjḍ] "egg"

[χɑjṯ] "thread"

3.3.4. Syllable Structure in TRT

Having established in a brief way some of the sound shifts in TRT, it may be necessary to list the permissible sequences of segments. On the basis of such classification of segments according to their potentiality of occurrence we may score their indices along the sonority scale established for this system. TRT exhibits a canonical shape of syllable structure distinct from that of cl. Ar which is based on recurrent CV syllables.

Initially, the most frequent type of syllable structure attested in this system is $ccv-, although a $ cvc- type is also attested. However, the $CV $ structure represents the least frequent type. The structures $ -VC # # and $- CV # # are the most frequent types in final position despite the presence of $ -vcc # # which are restricted to some cases of classicism, as in:

(17) /ʂabr / → [ʂɑbɾ] "patience"

/ farḍ / → [faɾḍ] "obligation"

3.3.5. The Phonotactic Constraints

The phonotactic constraints bring us to a longstanding matter of concern, but for the purpose of this work we shall shortly consider these constraints.

Upon consideration of what will be inferred from **Table I** which exhibits Initial two consonant clusters in words in isolation, the following generalisations are made:

The sequence of two consecutive consonants word initially stands as a phonotactic constraint in this system. The only exceptions scored are / b /, / m / and / d /, as in: [bbu:jji] "My father" [mma] "my mother" [dda] "he took".

In fact, the gemination of these segments is the result of a haplology rule which drops the glottal stop initially. The traces of this consonant deletion bring about consonant doubling. Consider:

(18) / ʔabi / → [bbu:jji] < cl.Ar

/ʔummi/ → [mma] < cl.Ar

/ʔadda/ → [dda] < cl.Ar

The initial sequences */ bf /, */fb / and */ bm/ are not accepted. Phonetically speaking / b/, / m / are stops and /f/ is a fricative. So, we would express this generalisation by the following rule:

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* fricative + stop –
Stop + fricative –

Another sequential constraint is that voiced consonants cannot be followed by voiceless consonants, especially when these segments share other features in common.

On the basis of **Table II** which exhibits the permissible and non-permissible consonant sequences word finally, some remarks may be formalised into the following tentative generalisations:

- The only segments which are disallowed to combine with each others are the low back consonants / ħ/ and /ʕ/.
- Obstruents which cluster word finally must agree in voicing at the surface, as in [kə pʃ]

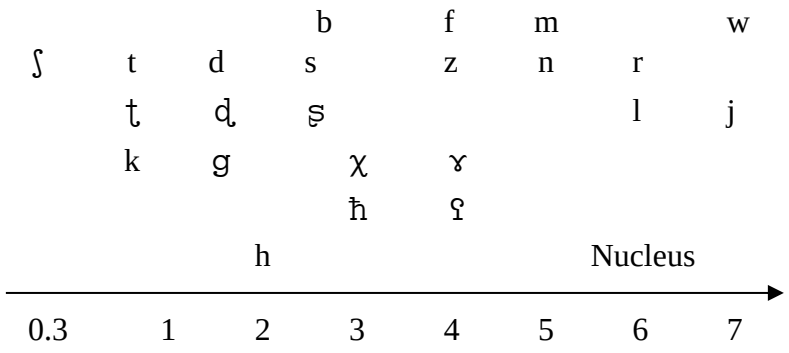
In terms of the sonority hierarchy the above mentioned observations mean:

- Voiceless stops are never followed by voiced stops finally although the reverse is possible: [kə pʃ], [səpt], [ħæpʂ].
- The voiceless fricatives are preferred as interior segments to voiced stops. Therefore, they rank higher on the sonority scale than the voiced stops, as in: [l əft], [ħæzd], [sæʕd].
- The voiced fricatives are disallowed to cluster with voiceless fricatives word finally as in: [nafχ], [ʕæfs], [ʕæ ʃʃ].
- The nasals are sonorous than liquids for they occupy C2 in final $ C1C2 # #, as in: [qarn], [ʕælm], [dʒorm].
- The glides appear to have a higher index than liquids in terms of the sonority scale, as in: [χajl, χajr].

Therefore, the sonority scale for final consonant clusters where segments rank from the least sonorous (0.3)[6] to the most sonorous (7) will be as follows:

[6] Since the segment /ʃ / occupies the farthest position in final three consonant clusters, we give this segment an arbitrary index of 0.3 on the basis of its distribution .It would be interesting to mention here that final $ ccc # # is the result of the combination of verbs ending in two clusters to which /ʃ / is attached .This / ʃ/ forms part of the negative marker {maa…..ʃ } , as in : /maa + daxal + tʃ / → [mædχlltʃ] " I didn't come in".

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4. Conclusion

This chapter discusses the major characteristics of the phonological system of TRT at the level of consonants and vowels. We have noticed that this system is characterised by the preservation of the /ɵ /, the emphatic /ɖ /, the diphthongs /aw / and /a j / in some cases. The velar /ɡ/is also part of the phoneme inventory of TRT and the / ʒ / of cl. Ar has been replaced by the alveo-palatol affricate [dʒ].

Thus the application of dialect classification (Cohen, 1970) to this variety leads us to say that TRT is more rural than urban. But, this can only mean that TRT is phonologically conservative since Cohen (1970) draws mainly on phonetic and morphological considerations.

In the sub-section on vowels, we have seen that a contrast between the front low vowel /æ / and the back low vowel / a / can be established in TRT. The processes of vowel centralisation and syncope are very productive. As a matter of fact; the canonical shape of the syllable structure in TRT is different from that of the source language. Thus, it has a distinct sonority of strength among segments.

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Table (I)
Initial Two Consonant Clusters

	b	f.	m	t	ʈ	d	ɖ	s	ʂ	z	n	ʃ	ʒ	k	ɡ	q	χ	ʁ	ħ	ʕ	l	r	h	w	j
b	+	-	-	-	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-
f	-	+	-	+	+	-	-	+	-	-	+	+	-	+	-	+	-	-	+	-	+	+	+	-	-
m	-	+	+	-	-	+	+	+	+	-	-	+	+	-	-	+	+	-	+	+	+	+	+	-	-
t	+	+	+	-	-	-	-	-	-	-	+	+	-	-	-	+	-	-	+	-	+	+	-	+	-
ʈ	+	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	+	+	+	-	+	+
d	+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	+	+	+	-
ɖ	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-
s	+	+	+	+	+	-	-	-	-	-	+	-	+	+	-	+	+	+	+	+	+	+	+	+	-
ʂ	+	+	+	-	-	+	-	-	-	-	+	-	-	+	-	-	-	-	-	-	+	+	+	+	+
z	+	+	+	+	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	+	+	+	+
n	+	+	+	-	-	+	-	+	+	+	-	+	-	-	+	+	+	-	+	+	-	-	+	+	-
ʃ	+	+	+	+	+	-	-	-	-	-	+	-	+	-	+	+	-	-	+	+	-	+	+	+	+
ʒ	+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	-
k	+	+	+	-	-	+	-	+	-	-	+	-	-	-	-	-	-	-	+	+	+	+	-	+	-
ɡ	+	-	+	+	+	+	-	+	+	+	+	+	-	-	-	-	-	-	-	+	+	+	+	+	+
q	+	+	+	-	-	+	+	+	+	+	+	-	+	-	-	-	-	-	+	-	+	+	-	+	-
χ	+	+	+	+	+	+	+	+	-	+	+	+	-	-	-	-	-	-	-	-	+	+	-	+	-
ʁ	+	+	+	+	+	+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	+	+	-	+	-
ħ	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	-	-	-	-	-	+	+	-	+	+
ʕ	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	-	-	-	-	-	+	+	-	-	+
l	+	-	-	-	-	-	-	+	-	+	-	-	-	+	+	+	-	-	-	-	-	-	+	+	-
r	+	+	+	-	-	+	+	-	+	+	-	+	+	-	+	+	-	-	+	+	-	-	+	+	-
h	+	-	+	-	-	+	-	-	-	-	+	+	-	-	-	-	+	-	-	-	-	+	-	+	-
w	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	-	+	+	+	-	-	-
j	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

A minus (-) represents a non-permissible consonant cluster.
A plus (+) represents a permissible cluster

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Table (II)
Final Two Consonant Clusters

	b	f	m	t	ʈ	d	ɖ	s	ʂ	z	n	ʃ	ʒ	k	g	q	χ	ʁ	ħ	ʕ	l	r	h	w	J
b	+	-	-	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	+	-	-	+	-	-	-
f	-	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
m	-	-	+	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-
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