

# AN ANALYSIS OF THE CONSONANT SYSTEM OF GĀ

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1. The consonants of Gā may be displayed as follows:

	LABIAL		POST-DENTAL			VELAR	
	bilab.	lab.- dent.	lab. vel.	alv.	pal.	lab.- pal.	lab'd vel.
<b>Stop</b>							
voiceless	p		ḱp	t			k
voiced	b		gb	d			g
<b>Affricate</b>							
voiceless				tʃ	tʃw		
voiced				dʒ	dʒw		
<b>Fricative</b>							
voiceless		f		s	ʃ	ʃw	h
voiced		v		z			hw
<b>Approximant</b>							
nasal	m		ŋm	n	ɲ		ŋ
oral-open	w			ɹ	j	jw	ɲw
lateral				l			

**REMARKS:**

1. All of these sounds contrast phonemically, except for the lateral and retroflexed oral approximants. [l], which is clear, occurs initially in the morpheme. A nasal variant [ɲ] occurs between nasal vowels. [ɹ], which has no friction except after t and d, occurs in every other position but in stylistic alternation with [l]. Therefore there is only one alveolar oral approximant phoneme, r. The articulatory difference between r and j parallels that between s and ʃ. The oral series of approximants may be rewritten as follows:

Labial	Post-Dental		
	alveolar	palatal	labio-palatal
w	r	j	jw

2. yw and w are very nearly in complementary distribution, since yw occurs mainly before i and w never does. But both occasionally occur before ε.

3. Nasal consonants tend to have a plosive release before oral vowels.

4. The labial velars seem to combine two air streams, probably the velaric ingressive and pulmonic ingressive, therein resembling Yoruba rather than the geographically much closer Late and Anum.<sup>1</sup> These consonants seem to be related to the bilabials, both in the synchronic system described here and in their historical development, and not the velars. In this language they might therefore be termed 'velarized labials'.

<sup>1</sup> See P. Ladefoged, A PHONETIC STUDY OF WEST AFRICAN LANGUAGES, 1964, p. 9.

2. There is no contrast between the stop and affricate modes of articulation, since the only affricates are palatal and labio-palatal post-dentals, and there are no stops articulated at these positions.

Similarly, all and only labio-dentals are fricatives, so there is no contrast between the bilabial and labio-dental positions of articulation.

Voice is a contrastive feature in the stops and the fricatives, but not in the approximants, which are all voiced. Nasality, on the other hand, is contrastive only in the approximants, since none of the stops and fricatives are nasal. There is a certain articulatory parallel between the two, since both have to do with obstructions to the air stream occurring outside the oral cavity. Since there are no contrasts in the system based on the presence or absence of voice versus the presence or absence of nasality, they can be treated as conditioned variants of a single phenomenon. The conditioning feature determining which of the two applies is approximant articulation. Since in Gã consonants nasality and voicelessness are more general in occurrence than voice and oralness, in this paper voice is viewed as equivalent to oralness. Voice/oralness contrasts with voicelessness/nasality.

3. On the basis of these considerations, the consonants of Gã can be described exhaustively in terms of three modes of articulation, three positions of articulation, and three additive features or prosodies.

The three modes of articulation are stopped, fricative and approximant, and the positions are labial, post-dental and velar. This gives a set of nine phonematic units:

	Labial	Post-Dental	Velar
Stop	P	T	K
Fricative	F	S	H
Approximant	M	N	Q

To this set are applied the modal feature of production and the positional features of centralization and inversion.

The feature of production (<sup>p</sup>) is present when stops and fricatives are voiced and when approximants are (voiced and) oral. It is absent when stops and fricatives are voiceless and when approximants are (voiced and) nasal.

When centralization (<sup>v</sup>) is present, articulation is palatalized.

Inversion (<sup>w</sup>) in the labials consists of velarization, or addition of a back position of articulation. In consonants whose position of articulation is farther back, i.e. post-dentals and velars, it consists of the addition of a front articulation, or labialization.

The scope of application of the features may be presented as a set of semi-ordered rules.

Rule 1. Each of the nine phonematic units occurs unaccompanied by any additive feature.

papa	'father'	n	ta	'chew'	v	ka	'examine'	v
fa	'borrow'	v	sa	'suit'	v	ha	'wear'	v
ma	'fasten'	v	na	'see'	v	ŋa	'craft'	v

Rule 2. The feature of production may accompany any unit except H or Q, resulting in the augmented set

P	T	K						
P <sup>p</sup>	T <sup>p</sup>	K <sup>p</sup>	ba	'come'	v	da	'grow'	v
F	S	H						
F <sup>p</sup>	S <sup>p</sup>	—	voo	'deep'	adj	zajŋ	'fat'	adj
M	N	Q						
M <sup>p</sup>	N <sup>p</sup>	—	wa	'be strong'	v	ra	'dream'	v

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Rule 3. Centralization accompanies all post-dentals except the voiced fricative.

Tʸ	T <sup>py</sup>	tʃa	'dig'	v	dʒa	'divide'	v
Sʸ		ʃa	'rot'	v			
Nʸ	N <sup>py</sup>	nyá	'rejoice'	v	ya	'go'	v

Rule 4. Inversion accompanies velars, labials except fricatives and the approximant accompanied by the feature of production, and palatalized post-dentals other than the approximant without production.

P <sup>w</sup>	T <sup>yw</sup>	K <sup>w</sup>	kpa	'roam'	v	tʃwa	'strike'	v	kwa	'pretend'	v
P <sup>pw</sup>	T <sup>pyw</sup>	K <sup>pw</sup>	gba	'tell'	v	dʒwa	'break'	v	gwantɛŋ	'sheep'	n
	S <sup>yw</sup>	H <sup>w</sup>				ʃwá	'blame'	v	hwáne	'argument'	n
M <sup>w</sup>		Q <sup>w</sup>	ŋmá	'become useless'	v				ŋwa	'be laughable'	v
	N <sup>pyw</sup>					ywe	'have sexual intercourse with'	v			

4. The final set of distinguished segments is as follows:

P	P <sup>w</sup>	T	Tʸ	T <sup>yw</sup>	K	K <sup>w</sup>
P <sup>p</sup>	P <sup>pw</sup>	T <sup>p</sup>	T <sup>py</sup>	T <sup>pyw</sup>	K <sup>p</sup>	K <sup>pw</sup>
F		S	Sʸ	S <sup>yw</sup>	H	H <sup>w</sup>
F <sup>p</sup>		S <sup>p</sup>				
M	M <sup>w</sup>	N	Nʸ		Q	Q <sup>w</sup>
M <sup>p</sup>		N <sup>p</sup>	N <sup>py</sup>	N <sup>pyw</sup>		

This set corresponds to the set of Gā consonant phonemes.