Stricture Relativity in Igbo and Yoruba Implosives

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Abstract

The distributive power of a segment or a group of segments is one of the dominant determinants of the overall "timbre" of a language. Of course their natural bearing on the so-called sonority sequencing ideology of Hogg and McCully (1987) must also not be divorced from the aforesaid markedness question (Crystal 1997; Williamson 1994). But the general acoustic impression of certain sounds, when evaluated across languages, brings to the fore the question of relativity in the framework of their production within the languages compared. This factor and, perhaps their (natural) fundamental frequency (*fo*) of occurrence, contribute to dictate the overall syncopation of the language system.

This paper argues, inter alia, that Igbo as well as Yoruba language, harbour a spectrum of implosives, and that whatever disparity in their relative degree of stricture even favours the "implosivization" of what have hitherto been referred to in Yoruba as labial velar stops. We think to be a bit inquisitive as we muster tools upon a somewhat micro index of the "make-up" of the category, within both codes that have the "kp gb" impressionism. In considering patterns of their "stricturing", it is not unlikely to, among other things, recourse to neurophysiological appeal in handling data. For test material the four hundred word list has been administered on native-speaker informants.

Introduction

The concept, stricture, refers to such articulation that inhibits the airstream to some magnitude ranging from complete closure to slight narrowing (Crystal 1997:365). The segments [ᶑ] and [ᶄ] are implosives. Implosivization is one of the peculiar features associated with Niger-Congo languages (Williamson 1989; Ekere 1999). Implosives are also reported in Hausa, Ikwerre, Ogbah, Ekpeye, Eastern Ijo, Nembe, Abua, Ogbia and the Delta Edoid group (Nigeria) as well as Maidu (Central California) (Williamson 1984: Clark and Yallop 1996). They are stops and are essentially imbued with the

characteristic popping idiosyncrasy which the plosive family is noted for. The im-sufix element as in [im] plosive, creates a kind of "reversal" impression to suggest that the direction of the airstream, upon disengagement of stricture, is rather ingressive, hence/implo-/; and not egressive as in /plo-/. Thus, one finds that the categories: some occlusives and implosives, are graphically similar except for this stricture question in articulatory behaviour, which conditions the direction of the plosion.

Implosives are typically obstruents (nonsonorant). Chomsky and Halle (1968:302) remark that nonsonorants' production is evidenced by a vocal cavity configuration in which spontaneous voicing is impossible. More specifically the feature [implosion] is a designation for implosives that specifies glottal closure in their production which generates a suction effect (Clark and Yallop 1996:431). Crystal corroborates this issue (1997:191-2) that implosives are the series of plosive sounds it is possible to make using an air stream mechanism involving an inwards movement of air in the mouth. A complete closure, he says, is made in the mouth as with any plosive sound, but the air behind the closure is not compressed, ready for outwards release; instead, a downwards movement of the larynx takes place, and the air inside the mouth is accordingly rarefied. Upon release of the closure, air is then sucked into the mouth at the same time as the glottis is released, allowing lung air to produce some vocal fold vibration. It is this combination of movements that results in the characteristically "hollow" auditory effect of the implosive consonants. What this implies for implosivization is a heavy neuromuscular activity within the laryngeal compartment. The tissues of the vocal folds when activated are tensed, whereupon the two folds block off the space in-between (the glottis). This glottal contact, pressure and closure, is simultaneously accompanied by another at the polar extremity of the supralaryngeal section. A similar neural mechanism in this anterior musters among other muscular facilitators, the orbicularis oris, for a firm closure of the lips, while bilabial suction is on a priori. The release at both ends (articulators and glottal) is simultaneous.

Our argument include the fact that the observed general tendency of implosives (as stated above) abound in both languages as well as vary in some notable ways in both languages under study. The overt variations in certain aspects of the impressionistic rhythm of both codes, especially those (variations) orchestrated by implosives (like the ones under consideration) are precipitates of their neuromuscular antecedents. It is, indeed, this that dictates the relative degree of stricture for the segments in both codes.

The Data

Williamson (1984:43) upholds the following tone-marking convention for Igbo and Yoruba languages:

Table I

Language	***High***	***Low***	***Mid***	***Down step***
Igbo	Unmarked or			–
Yoruba			Unmarked	

We will therefore render our data in both codes following the stated convention. The units presented in the data below have been extracted from the corpora of the standard wordlist of four hundred basic items.

Data AI (Yoruba)

	Conventional Transcription	
1.	***agbo□n [àgb□□]***	'chin'
2.	***irugbo□n [irùgb□□***	'beard'
3.	***igbe [igb□□]***	'faeces'
4.	***agbado [àgbàdó]***	'maize'
5.	***ogede-agbagba [òg□□d□□-àgbágba]***	'plantain'
6.	***gbomgbo [gbòmgbò]***	'root'
7.	***igbo [igbó]***	'bush'
8.	***igba [igbá]***	'calabash'
9.	***igba-ojo [ìgbà-òdɑ̀ò]***	'rainy season'
10.	***igba-ogbele [ìgbà-ògb□□l□□]***	'dry season'
11.	***olomgbo [òlóm□gbò]***	'cat'
12.	***alamgba [àlám□gbà]***	'lizard'
13.	***igbin [ìgbĩ□]***	'snail'
14.	***arugbo [àrúgbó]***	'old person'
15.	***agba [àgbà]***	'senior/older'
16.	***agbalagba [àgbàlágbà]***	'elderly'
17.	***egbo□-o□ku□ri□n [egb□□-□□kuri]***	'elderly man'
18.	***egbo□-o□bi□ri□n [egb□□-□□bĩrĩ]***	'sister (elder)'
19.	***o□gbo□ [□□gb□□]***	'thirty'
20.	***gbe□ [gb□□]***	'dry'
21.	***gbonan (as fire) [gbón□□□]***	'hot'
22.	***lagbara [lágbára]***	'strong'
23.	***gbemi [gbémi]***	'swallow'
24.	***yagbe [jàgbé]***	'defecate'
25.	***gba [gbà]***	'get' (obtain)
26.	***gboran [gb□□õr□□]***	'hear'
27.	***gbagbe [gbàgbé]***	'forget'
28.	***gbe [gbé]***	'carry' (load)
29.	***gbale□ [gbálè]***	'sweep'
30.	***gbe□[gb□□]***	'dig'
31.	***gbe□le□ [gb□□l□□]***	'dig ground'

32.	***gbe [gb]***	'sow'
33.	***gbe (tubers) [gb]***	'plant'
34.	***gbe (wood) [gb]***	'carve'
35.	***gbe [gbé]***	'dwell'
36.	***agbero [ágbèrò]***	'motor park car loader'

Data AII (Yoruba)

	Conventional Transcription	
37.	***epo [ékpó]***	'oil'
38.	***iye pe (soil) [ij kp]***	'earth'
39.	***crupe [érùkp]***	'sand'
40.	***oshupa [òùkpá]***	'moon'
41.	***pe pe ye [kp kp j]***	'duck'
42.	***ijapa [ìdàkpá]***	'tortoise'
43.	***opolo [kp kp l]***	'frog'
44.	***pupa [kpúkpá]***	'red'
45.	***apaotun [àkpáòtũ]***	'right' (sight)
46.	***apaosi [àkpáòsì]***	'left'
47.	***yipada [jikpadà]***	'turn around'
48.	***pe [kpè]***	'call'
49.	***kopo [kòkp]***	'gather' (something)
50.	***pin [kpĩ]***	'divide'
51.	***pari [kpàrí]***	'finish'
52.	***pa [kpá]***	'kill'
53.	***panan [kpàn]***	'extinguish'

Data BIII (Igbo)

Conventional Transcription

54.	***uⅡgboⅡala [u◷⚐àlà]***	'car'
55.	***mgboⅡroⅡgwu [m⮙◷⚐⮙r⚐⮙gwù]***	'root'
56.	***igbaghi [ìba✞ì]***	'shoe'
57.	***egbe [e◷e]***	'hawk'
58.	***MgbaasiⅡ [m⮙◷aasì]***	'witch'
59.	***gboⅡoⅡ [◷⚐⮙⚐]***	'vomit'
60.	***gbaa [◷àa]***	'dance'
61.	***gbaa [◷àa]***	'shoot'
62.	***gbaa [◷àa]***	'run'
63.	***gbuo [◷ùo]***	'kill'
64.	***gbajie [◷àdʗie]***	'break'
65.	***mgbirimgba [m◷✋r✋m◷a]***	'bell'
66.	***gbahara [◷ahàra]***	'forgive'
67.	***agbara [a◷àrà]***	'idol'
68.	***mgbidi [m◷īdī]***	'wall'
69.	***iⅡgba [ì◷à]***	'excellent'
70.	***ugbo [u◷ō]***	'farm'
71.	***agbogho [à◷⚐✞⚐◖]***	'spinster'
72.	***agbu [a◷u]***	'fetters' (bond)
73.	***ugboⅡala [u◷⚐àlà]***	'vehicle'

Data BIV (Igbo)

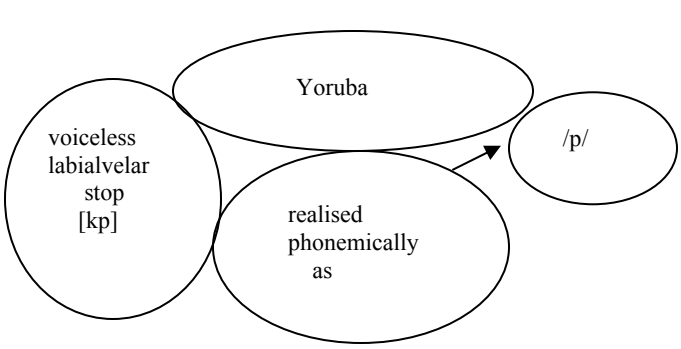
Conventional Transcription

74.	***ikpere [i◷☚⮙r☚⮙]***	'knee'
75.	***oⅡkpuⅡkpuⅡ [⚐◔u◔u]***	'bone'
76.	***akpa [à◔à]***	'bag'
77.	***okpu [ò◔u]***	'cap'
78.	***kpakpando [◔a◔an⮙dò]***	'star'
79.	***mkpi [m⮙◔u]***	'he-goat'
80.	***okeokpa [oke⚐⮙◔à]***	'cock'
81.	***akpuⅡkpoⅡ [a◔u◷⚐]***	'flay'
82.	***mkpuⅡmkpuⅡ [m◔um◔u]***	'short' (of stature)
83.	***kpaa (isi) [◔àa]***	'hair-cut'
84.	***kpuchie [◔ùt♠ie]***	'cover' (conceal)
85.	***ekpere [è◔ere]***	'prayer'
86.	***mkpiⅡriⅡ [m⮙◔iri]***	'ribs'
87.	***akpi [a◔ì]***	'scorpion'
88.	***ekpo [e◔o]***	'masquerade'

Observation/Discussion

At this juncture, we would like to call attention to the following realizations as enunciated by Williamson (1984:28):

Fig. I



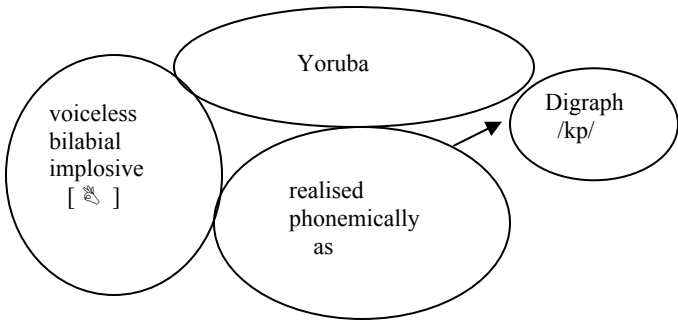
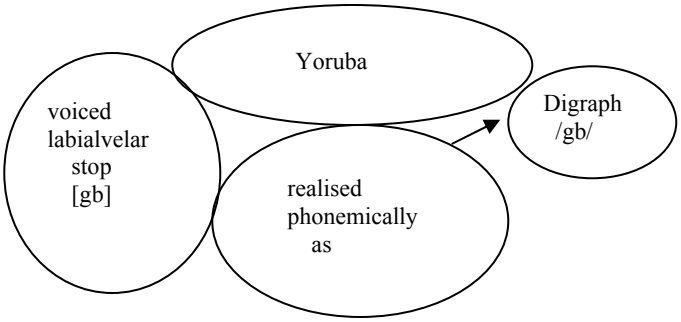
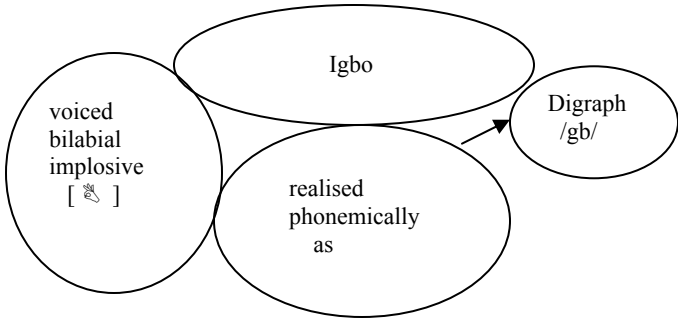


Fig. II





Clearly from our data and from the above schema, the range of segments described as voiceless labial velar stop [kp] in Yoruba, and voiceless bilabial implosive [ ] in Igbo; as well as the ones construed as voiced labial velar stop [gb] in Yoruba and voiced bilabial implosive [ ] in Igbo, are produced with very similar articulatory mechanisms; albeit with slight variation in the range of stricture approximation. The modus operandi of the neuromuscular framework involved in their stricture and release at the anterior oral cavity is basically the same. The major musculatures employed include the orbicularis oris, the Buccinator, the Risorius and the Zygomatic (major and minor). Others may apply marginally.

It is noticed that the behaviour of the kp gb units in our data for both languages is seriously not in tandem with populist view. For instance what

justification would anybody have to describe the doubly articulated segment -gb- in the first item of data BIII – ugboala 'car' as implosive and the -gb- of the first item in data AI agbon 'chin' as labiavelar?; or indeed the -gb- in all the units of data BIII as implosive, and then the -gb- in all the units of Data AI as anything less? The irony of the situation is that the intensity of stricture for -gb- in all the items of Data AI is far stronger than those of BIII.

In addition, the action of the orbicularis oris in drawing the lips inwards in response to cavity pressure build-up, is much more prominent in Data AI than in data BIII. There is much more "massive labialisation" in the former than in the latter. Whereas there is a high activation of the orbicularis oris for forms as in Data AI (Yoruba), the buccinator will be stimulated commensurately (if not more) for forms as in Data BIII (Igbo); thus drastically checkmating such ingressivization of airstream as is characteristic of Data BIII.

If therefore all the -gb- forms in the Yoruba data above, are seen to conform to the general descriptive trend of implosives (as is obviously the case), and even much more than the -gb- forms in the Igbo Data BIII generally held as implosive (Emenanjo亚 1987; Williamson 1984; Ikekeonwu 1999 in IPA 1999) but which is actually less "ingressivized" than the former, what then is wrong in categorizing the -gb- Yoruba forms – Data AI as implosive?

Similarly, having examined the form realized phonetically in Data AII Yoruba) as [kp] and designated labiavelar, as well as that realised in Data BIV (Igbo) as [ᶄ] designated implosive, it is observed that there is just no point of departure in the operative mechanism regulating their production in both codes. The only variation in neuromuscular indices surrounding their output and those of the -gb- forms earlier discussed, is localised within the phonatory arch. Here, the sensitization of the posterior cricoarytenoid muscles and/or the interarytenoid muscle, alternate the structure of the vocal folds and, by implication, glottal configuration; depending on which particular sound is to be produced. So then from the data there does not seem to be any difference between what is referred to as voiceless labialvelar stop [kp] in Data AII (Yoruba), and what is described as voiceless bilabial implosive [ᶄ] in Data BIV (Igbo). Yet another irony that readily suggests itself as schematized above (fig. I) is that this particular form -kp- is adopted to <u>phonetically</u> represent the Yoruba voiceless labialvelar stop, and thus written [kp] while it is also adopted to <u>phonemically</u> represent (Igbo) voiceless bilabial implosive, and thus written /kp/. If this agreement is "tacitly acknowledged" why not also call the form -kp- an implosive in Yoruba? In figure II above, you also find the form -gb- realized [gb] phonetically and /gb/ phonemically in Yoruba, but tagged labialvelar (voiced); while it is also realized as /gb/ phonemically in Igbo but tagged implosive. The data shows that it is even more implosive (not labialvelar) in its Yoruba realization, than the Igbo that designates it implosive. So why is the labialvelar term employed here?

Perhaps it is germane at this point to recall one of the principles of good orthographies spelt out by Williamson (1984:7). That is, the principle of harmonization. She had referred to Wolff (1954:8-9) who called it the principle of similarity to other orthographies. Williamson observes that in view of the plurilinguistic nature of Nigeria in which most of the citizens are bilinguals or even multilingual, the need for congruency among the indigenous orthographies cannot be overemphasised. They should diverge as little as possible. According to her, if a letter is used in one language to represent a certain sound, every effort should be made to avoid using that same letter to represent a completely different sound in another language (p. 10). This principles, says Williamson, encourages Nigerians to read one another's languages by writing them as far as possible in the same way.

Linguistics, it needs be stressed, has come this far because people took the bull by the horns to report objectively issues as observed to occur in natural languages. This has often led to the candid response of modifications in hypotheses, theories, and general views held a priori. The situation has in turn enriched the discipline with various schools of thought over the years that have positioned linguistics as, according to Essien (2001), the most 'scientific' of the Humanities and the most 'humanistic' of the Sciences. One's observation of the data in this study, really calls for a reappraisal of the Yoruba orthography. I simply do not subscribe to the realisation of the forms: kp gb, as labial velars in Yoruba. They are more implosive than the so-called Igbo implosives [🕒 🕓], which do not even seem far removed from the "labialvelar" in their relative stricture.

As a corollary to the foregoing, our proposition will realize Data AI and AII as Data CV and CVI respectively.

Data CV

	Proposed Form	
89.	***agbo⫴n [à🕓⚐☯⮝]***	'chin'
90.	***irugbo⫴n [írù🕓⚐⮝]***	'beard'
91.	***igbe [ì🕓☜⮟]***	'faeces'
92.	***agbado [à🕓àdó]***	'maize'
93.	***ogede-agbagba [òg☜⮝d☜⮝-à🕓á🕓a]***	'plantain'
94.	***gbomgbo [🕓òm🕓ò]***	'root'
95.	***igbo [ì🕓ó]***	'bush'
96.	***igba [ì🕓á]***	'calabash'
97.	***igba-ojo [ì🕓à-òd☪ò]***	'rainy season'
98.	***igba-ogbele [ì🕓à-ò🕓☜⮟l☜⮝]***	'dry season'
99.	***olomgbo [òlóm⮟gbò]***	'cat'
100.	***alamgba [àlám⮟🕓à]***	'lizard'
101.	***igbin [ì🕓ĩ⮟]***	'snail'
102.	***arugbo [àrú🕓ó]***	'old person'
103.	***agba [à🕓à]***	'senior/older'
104.	***agbalagba [à🕓àlá🕓à]***	'elderly'

105.	***egboⅡ-oⅡkuⅡriⅡn [☜⅄☺⅊➋-⅊kùrĩ]***	'elderly man'
106.	***egboⅡ-oⅡbiⅡriⅡn [☜⅄☺⅊-⅊bĩrĩ]***	'sister (elder)'
107.	***oⅡgboⅡ [⅊⅄☺⅊⅄]***	'thirty'
108.	***gbeⅡ [☺☜⩒]***	'dry'
109.	***gbonan (as fire) [☺ón⅊➋⩒]***	'hot'
110.	***lagbara [lá☺ára]***	'strong'
111.	***gbemi [☺émi]***	'swallow'
112.	***yagbe [jà☺é]***	'defecate'
113.	***gba [☺à]***	'get' (obtain)
114.	***gboran [☺õr⅊➋]***	'hear'
115.	***gbagbe [☺à☺é]***	'forget'
116.	***gbe [☺é]***	'carry' (load)
117.	***gbaleⅡ [☺ál☜⅄]***	'sweep'
118.	***gbeⅡ [☺☜⩒]***	'dig'
119.	***gbeⅡleⅡ [☺☜⩒l☜⅄]***	'dig ground'
120.	***gbeⅡ [☺☜⅄]***	'sow'
121.	***gbeⅡ (tubers) [☺☜⅄]***	'plant'
122.	***gbeⅡ (wood) [☺☜⩒]***	'carve'
123.	***gbe [☺é]***	'dwell'
124.	***agbero [á☺èrò]***	'motor park car loader'

Data CVI

	Proposed Form	
125.	***epo [é☺ó]***	'oil'
126.	***iyeⅡpeⅡ (soil) [ij☜⅄☺☜⅄]***	'earth'
127.	***erupeⅡ [érù☺☜⅄]***	'sand'
128.	***oshupa [ò♠ù☺á]***	'moon'
129.	***peⅡpeⅡyeⅡ [☺☜⩒☺☜⩒j☜⩒]***	'duck'
130.	***ijapa [ìdᏀà☺á]***	'tortoise'
131.	***opolo [⅊⅄☺⅊⅄l⅊⩒]***	'frog'
132	***pupa [☺ú☺á]***	'red'
133.	***apaotun [à☺áòtũ⩒]***	'right' (sight)
134.	***apaosi [à☺áòsì]***	'left'
135.	***yipada [jí☺adà]***	'turn around'
136.	***pe [☺è]***	'call'
137.	***kopo [kò☺⅊⅄]***	'gather' (something)
138.	***pin [☺ì⩒]***	'divide'
139.	***pariⅡ [☺àrí]***	'finish'
140.	***pa [☺á]***	'kill'
141.	***panan [☺àn⅊➋⩒]***	'extinguish'

Conclusion

Our assessment of the select category of implosives in Yoruba and Igbo has drawn significantly from the neurophysiology of speech. This study has consciously tried to avoid extreme intricacies of technicalities in buttressing its standpoint. This is phonology, and we have merely examined the behaviour of the said segments within the domain of lexical entries in both codes. From

rule-of-the-thumb perception, it is not unlikely that our position here may be more perspicuous in syntagmatic relations.

In handling phonological segments, one finds himself grappling with very tiny and virtually "microscopic" variables that, oftentimes, are wont to be taken for granted. But these are the "building blocks" (Ojukwu 2000) upon which our "structure" is hinged. Our analysis, therefore, is most objective and with the best of intents; and one desires that it be seen as such.

Notes

1. This paper was first given at the symposium in honour of Professor Kay Williamson at the University of Port Harcourt, Nigeria.
2. Professor P.A. Nwachukwu (University of Nigeria) had during the presentation of this paper submitted that he had sometime ago drawn the attention of veteran (Yoruba) Linguist, Professor Ayo Bamgbose to issues of the type raised here.
3. Many thanks to Olugbenga Alo of the Department of Electrical/Electronics Engineering, University of Port Harcourt for supplying both the raw and the recorded versions of the Yoruba data.
4. Whereas mid-tones are conventionally left unmarked in Yoruba, it is the high tones that are unmarked in Igbo.
5. The Ilesha (Yoruba) speech community is in Osun State of South-Western Nigeria.

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