EPENTHESIS VS. ELISION IN AFRO-IBERIAN LANGUAGE: A CONSTRAINT-BASED APPROACH TO CREOLE PHONOLOGY

John M. Lipski
(University of New Mexico)

Introduction

Phonological modifications taking place during pidginization and creolization have been relatively little explored, in contrast to the attention received by grammatical reduction and restructuring. Creolists often feel intuitively that substratum influences can be most clearly detected in the area of phonological differences between the lexifier language and the ensuing pidgin or creole, but the fact remains that many creoles exhibit phonotactic patterns which do not simply mimic the prevailing substrata. It is typically the case that the phonological patterns of the creole lie somewhere between the full range of structures found in the lexifier language and the patterns of the substrate. Thus for example the substrate language(s) may contain no syllable-final consonants or onset clusters, as opposed to a lexifier language (e.g. English, French, Portuguese, Dutch) richly endowed with both combinations. The creole may exhibit fewer syllable-final consonants and onset clusters without attaining the uniform CV syllable-structure of the substratum (cf. Singler 1996). Nor can ‘decreolization’ in the direction of the lexifier language always be adduced to explain the intermediate phonological status of pидgins and creoles, although there is a partial correlation between the most ‘radical’ creoles (i.e. those formed most rapidly, and cut off from subsequent contacts with the lexifier language rapidly thereafter) and greatly reduced syllable structure: Sranan, Saramaccan, Berbice Dutch, Akan, Krio (fa d’ambé) and Jamaican Maroon have phonological patterns much more like their postulated substrata than Cape Verdean Crioulo, Papamanti, Philippine Creole Spanish (Chabacano), the Asian Portuguese creoles or even Palenquero. At the same time, contemporary contact varieties of Spanish and Portuguese in conjunction with African and Amerindian languages often exhibit phonological patterns considerably more complex than those of the substrate, despite opportunities for full acquisition as limited as those which characterized earlier creole genesis. This indeterminacy can be particularly frustrating when dealing with earlier stages of language contact, in which direct evidence of pidginization or creolization is lacking.

The present study examines phonological restructuring in the interface between West African languages and Ibero-Romance (Portuguese and Spanish), from the early 16th century to the beginning of the 20th century. The investigation focuses on the treatment of onset clusters and syllable-final consonants, both of which are lacking in a broad cross-section of African languages which interacted with Spanish and Portuguese. A survey of the outcomes of borrowing and creolization at first provides a chaotic panorama, for it seems that sometimes consonants were lost, sometimes paragogic
or epenthetic vowels were added, and sometimes other modifications resulted. The results of Afro-Iberian linguistic contacts can be verified empirically in the case of attested borrowings into African languages as well as in surviving creoles. Of special interest to creolists is the status of Afro-Brazilian Portuguese, as well as attestations of Afro-Hispanic language of earlier centuries. The analysis, couched within the framework of Optimality Theory, demonstrates that a consistent series of ranked constraints guided the incorporation of Portuguese and Spanish words into Afro-Iberian pidgins and creoles, in essentially the same fashion that Ibero-Romanic words were borrowed into African languages. The earliest borrowings employed constraints that were closest to those operating in the principal substratum languages, although the means for satisfying these constraints often differed widely between the incipient pidgins and creoles on the one hand and the African languages on the other. Subsequent reconvergence in the direction of Spanish and Portuguese, e.g. in Brazilian Portuguese, Papiamento, Palenquero, and Cape Verdian creole, yielded constraint rankings that are closer but not identical to those characterizing Ibero-Romanic.

**Coda consonants in Afro-Iberian language**

Although there are some instances of neutralization of coda consonants (particularly the liquids /l/ and /r/), the only two consistent modifications affecting coda consonants in Afro-Iberian language, as well as in Portuguese borrowings into African languages, are elision and the addition of a word-final paragogic vowel. In both instances an open CV syllable results, suggesting phonotactic adaptation to the predominant pan-African syllabic template as the principal motivation for these modifications.

Paragogic and epenthetic vowels are common in Portuguese borrowings into African languages, as well as in Ibero-Lusitanian creoles. Some examples are:

\[\text{kiKongo}:\] dotolo < doutor; katekismu < catecismo; kidisitu < Cristo; kulunsi < cruz; losu < arroz; mutulukense < portugues; nanasa/nanasi < anánde; ngesle < inglês; nsaulu < saí; poosta < posto; dótelo < doutor; Dezu/Dezo < Deus; Davida < David; kal'ankala < cal; klulu < kluzu < cruz; kulumeta < corneta; lasola < lenço; legadolo < regador; lóssuo/lozo < arroz; Mbelenadu < Bernardo; Mbolôzi < Ambrósio; métilo < metro; Mpetolo < Ngoutumu < Agostinho; nzolo/anholo < arroz; palata < prata; poluvela < pólvora; \]

\[\text{kiMbundu}:\] calolo < claro; Culuduo < Cláudio; lapassu < rapaz; Rodolofo < Rodolfo.

Portuguese preconsonantal /s/ was not always salvaged by addition of a paragogic vowel, but was sometimes lost, as in kiKongo fofofo < fofofo; kipeelo < espelho; lupitaatu < hospital. Metathesis was an occasional option:**

\[\text{kiKongo}:\] sikoba < escoba; sikonda < escola; sibona < espanhol; sitaludu < estado;

The final paragogic vowel (whose timbre was normally dictated by processes of vowel harmony), was almost invariably added after a stressed syllable; when the final syllable was unstressed, the Portuguese final consonant was most frequently lost, as in kiKongo khiapi < lápis; vekolo/ukalo < óculos; wooio < ouras; zikupa < copas.

Similar developments are found in Afro-Lusitanian creoles, particularly those of the Gulf of Guinea (Ferreira 1979, 1984; Granada 1994b; Vila 1991; Barrena 1997; Maurer 1995; Günther 1973). To cite only a few examples, from Sô Toméense (ST), Princípeense (P), Angolar (A), and Annobonense (Ann):

\[\text{arroz} > \text{ST} \text{ loso}, \text{Ann. aloso}, \text{P. urosu}; \text{azul} > \text{ST} \text{ zulu}; \text{barril} > \text{ST} \text{ balil}, \text{A barriti}; \text{claridade} > \text{A kerei}; \text{Deus} > \text{ST} \text{ desu}; \text{doutor} > \text{ST} \text{ dotólo}; \text{flor} > \text{Ann. folli}; \text{garfo} > \text{ST} \text{ galufu}; \text{goverdor} > \text{Ann. vogondólo}; \text{hospital} > \text{ST} \text{ lópolo}; \text{Lísboa} > \text{A diziboia}; \text{mais} > \text{ST} \text{ P. M. masí}; \text{óculos} > \text{ST} \text{ oklo}; \text{pez} > \text{ST} \text{ pazi}; \text{Pedro} > \text{Ann. Péduku}; \text{sabador} > \text{Ann. sabedólo}; \text{senhor} > \text{Ann. sólo}; \text{sólo} > \text{Ann. sóló}; \text{três} > \text{ST} \text{ três}; \text{voz} > \text{ST} \text{ vosu}.

A number of instances of paragogic vowels are also found in Afro-Brazilian Portuguese, especially place names and nicknames, where the kiKongo and kiMbundu input was very strong. Some of the modified forms have become fixed in nonstandard rural varieties (Machado Filho 1964:71, 84, 109-10; Raimundo 1933:69-71; Ramos 1933:248), for example:

\[\text{Firimão} < \text{Firmino; Fuluengu} < \text{Fulêngu; Puludêngu} < \text{Prudêncio; purugunta} < \text{purga; Quelmente} < \text{Clemente; suporeta} < \text{espeleta}.\]


Paragogic vowels were also common in literary imitations of the língua de pretto found in Portuguese from the middle of the 15th century until the early 19th century. Some examples include (Brásio 1444, Costa e Sá 1948, Lipski 1994a, Tinhorão 1988):

\[\text{boso} < \text{vos}, \text{deco} < \text{deus}, \text{Furunando} < \text{Fernando, saparoro} < \text{espantado}, \text{senhoroko/stono} < \text{senhor, furutai} < \text{furtai, faramos} < \text{formosa, Purutagá} < \text{Portugá, lurugá} < \text{furugá}, \text{furutá} < \text{furtal, dosso/dosso} < \text{dos}, \text{confessório} < \text{confessor, busucal} < \text{buscal, gaspar} < \text{Gaspar, mayolo} < \text{mayor, jesus} < \text{Jesus, lico} < \text{lior, mági} < \text{mais, faramosa} < \text{formosa, micro} < \text{melhor, ótora} < \text{otora, doutor} < \text{doutor, quirurada} < \text{quebrada.}\]

Active use of paragogic vowels was not likely to have formed part of a natized Afro-Portuguese vernacular, but the textual evidence suggests that some fossilized forms
may have remained, including dioksa, siora, Furunando, and possibly bosso (Lipski 1994a). Many early examples illustrate the use of vowel harmony: bosso < vos, deosso < deus, Furunando < Fernando, faramo < formosa, Pututu < Portugal, etc. Vowel harmony is frequent in many Kwa languages, and in Bantu languages. It can be found in the Portuguese-based creoles of the Gulf of Guinea, and in Papiamento (Baard 1975, Birmingham 1970, Goilo 1953, Martinus 1996). This phenomenon would disappear together with the active use of paragogic vowels.

Contemporary vernacular Portuguese as spoken in the musseques or working-class neighborhoods of Angola also shows evidence of both elimination of cade consonants and paragogic vowels, although given the use of Portuguese as the official language of the country and the language of schooling, divergences from standard Portuguese pronunciation are comparatively fewer than in unmutilated pidgins. For example, Mattos e Silva (1904) described the language and customs of the natives of Cabinda at the turn of the 20th century. He includes an extensive glossary of Portuguese terms borrowed into Cabinda, which exhibit many of the phonetic deformations characteristic of Afro-Portuguese pidgin throughout Bantu-speaking Africa. He also gives an explicit description of the difficulties experienced by Africans in Cabinda when attempting to speak Portuguese (214):

Nota se que os cabindes teem grande dificuldade em pronunciar palavras muito compridas e ainda mais o r quando seguido d’outra consoante, de que nao me recordo d’inxo na su lingua, muito farta em vogas. D’esta dificuldade resulta que elles vao alterando bastante, a’ vezes por graus successivos, as palavraes portuguesas que empregam, transformando-as pouco (de palavra fazem palavera), ou de modo tal que, quem nao estiver habituado, sobretudo nao sendo portugues, nao distinguir facilmente a origem do termo que ouve. Assim se foi transformando o nome da nossa patria, e, pelos ensaios repetidos que fiz exercer a varios pretos, julgo poder dizer que a transformação foi sucessiva e feita por estes graus, pelo menos: Pátiguare, Páteguare > Pato.

He also gives imitations of Cabindenses’ attempts at speaking Portuguese, in which many paragogic vowels appear:

mas, sior, paliêque Manipulo da licênca tento baranco do mato venha no costa? gentes d’êre non chega pâla têle aqui? Ere manda vôretale esse gentes mau no têla d’êres, non da licênca mais pâles valei eir outro viage: plêto todo, uji cabinda, uji mussorango, amigo, esti queto, guida nam lem, tanto gente non plecia cê, casigio já chega (p. 225).

This text also contains numerous examples of the modification of individual Portuguese words, including kapazo < capaz, garânida < grande, batile < barril, chião < senhor, etc. These observations are of particular interest since they document pidginized Portuguese in contact with a Bantu language which has received little attention in the context of Afro-Iberian linguistics. Cabinda was a key area of the Portuguese Congo, and was originally a part of a geographically continuous colony, before being estranged from Angola by the formation of the Belgian Congo. Lipski (1994a, 1995b) contains more examples of phonological restructuring in Angolan musseque Portuguese and Afro-Brazilian language.

Spanish Golden age texts provide many examples of paragogic vowels in the bosal imitations (Lipski 1995a, Dunzo 1974, Chasca 1946):

amore/amolo < amor, bajone < bajón, Belena < Belén, biczoc contiene < biczochos, bolocato < brocado, bueya < buey, colere < color, cansione < canción, cascabele < cascabel, colchono < colchón, colored < color, corazono/corazona < corazón, de tras < detrás, desden < desné, dioso/dizao/diosa < Dios, disipares < dispersas, efetulo < efecto, favore < favo, flore < flor, frescupare < frescura, Gaspar < Gaspar, generala < general, gurugante < gargarra, ladrone < ladrón, Madrillos < Madrid, Melchoro/Mechoro < Melchor, melacrona < melocoton, mercede < merced, mesei < mes, nuece moscada < nuez moscada, pavilone < pabellón, poore < poer, perjila < perijel, pescaros < pecado, piñone < peñón, portalo < portal, procesiona < procesión, pululgeo < perfecto, religiona < religión, reya < reg, salamandra < salamandra, sioro/seoro/sinoro/siñolo/sictlo < señor, sole < sol, temora < temor, tradoro < traidor, Tumbucu < Tumbuctú, turimento < tormenta.

Similar examples are found in the Afro-Peruvian (Lipski 1994b) and Afro-Argentine (Lipski forthcoming) materials.

Among the remaining Afro-Iberian creoles, use of paragogic and epenthetic vowels is relatively uncommon. Palenquero has few examples: dioso < diés is an archaic leftover (also sibir < servir [Schwegler 1996: 391]), largely because the regional (vernacular Caribbean) Spanish dialects that served as input had already experienced severe reduction and elision of syllable-final consonants (Friedmann and Pettino 1983, Grande 1994a). Papiamento primarily used paragoge with consonant-final Dutch words (e.g. hopi < hoop ‘very’), and very seldom employed epenthesis (e.g. delég < delgado).

Remnants of paragogic vowels occasionally turn up in vestigial Afro-Hispanic language throughout Latin America. For example Althoff (1994) found abolos < abel, meto < metor, coloro < color, and mujera < mujer in an isolated Afro-Mexican community. The form romo < ron sporadically occurs in vernacular Afro-Dominican Spanish (cf. Megenney 1990: 115; Lipski 1994c).

Onset clusters in Afro-Iberian language

Another set of processes affecting Afro-Iberian contact language is the reduction of onset clusters (invariably obstentent- + leucos in Romance), through loss of the liquid, as opposed to the insertion of an epenthetic vowel between the two consonants. In Afro-Portuguese contact vernaculars, this gave rise to quasi-lexicalized variants, such as nêgo < negro, now a standard term of endearment in Brazilian Portuguese. Reduction of syllable-initial clusters is also found in some isolated vernacular dialects of Brazilian Portuguese in which a heavy African presence can be documented (e.g., Jeroslow
1974:45-50; Mendonça 1935:114; Raimundo 1939:70-72). In the Spanish Caribbean, *ombre < hombre* has been similarly institutionalized as a vocative, in colloquial speech and popular music. With some noteworthy exceptions, reduction of onset clusters in Afro-Iberian language occurred in unstressed syllables; in stressed syllables, addition of an epenthetic vowel was a more common option. The only verifiable cases from Golden Age Spain are bolocdo < brocado, esturmento < instrumento, falauta < flauta, and salamandra < salamandra. A handful of cases is found in Argentina/Uruguay at the turn of the 19th century: balanco/baranco < blanco, conferera < Conterras, ofrenda < ordea, otoros < otor, pobre < pobre, quilitino < cristiano, sabelemo < sabremo.

These examples may reflect the fact that as the slave trade to the Rio de la Plata region peaked in the late 18th century, a large proportion of the Africans were transported from Brazil, where at least some had learned the rudiments of Portuguese.

Onset-reduction rarely occurred in word-initial syllables, even when unstressed; thus *faco < fraco, tabalho < trabalho, *quistão < cristão, etc. Indeed, in Golden Age/Renaissance literary imitations of Afro-Iberian speech, reduction of onset clusters is surprisingly rare, given the rather more frequent appearance of this phenomenon in actual pidgins and creoles. The Afro-Iberian Golden Age corpus has no convincing examples (hombre < hombre, negro < negro, etc., do not appear until the 19th century).

Among surviving Afro-Iberian creoles, onset clusters are generally maintained in Cape Verde Crioulo, Guinea-Bissau Kriyêl, Palenquero (except for isolated words such as ngande < grande), and Papiamentu. In the Gulf of Guinea, the creole of São Tomé has maintained most Portuguese onset clusters, although all /Cr/ clusters have been changed to /Cr/. However, among the remaining creoles (Annobón, Principle, Angolar), elimination of the liquid in onset clusters was the rule: Annobonesek *taba < trabalhar, keba < quebrar, pata < plato pata < preto* (Granda 1994b: 432-3); Angolar *kuli < cubrir paar/paary < prata, paata prata, pisip < príncipe, teme < trem* (Maurer 1993); Principle *bíko < branco, fuku < fraco, gani < grande, kebá < quebrar, petu < preto, tabé < trabalho* (Günther 1973). This group of Afro-Iberian languages stands apart from the remainder of pidgins and creoles in effecting such a massive reduction of onset clusters, as opposed to the more common option of inserting epenthetic vowels or retaining the clusters in unmodified form.

**Treatment of Ibero-Romance onset clusters among African languages**

By far the majority of African languages, from all major families, tolerate only single consonants in the syllable onset. Although many languages exhibit prenasalized obstruents, these invariably behave as single phonological elements. The same holds for doubly articulated labiovelar stops, normally written as *kp* and *gb*, and which act as phonologically single consonants. When European words were borrowed into a wide variety of African languages, insertion of an epenthetic vowel were used to break up onset clusters (Kiratihie and Baden 1976, Prata 1983, Baal 1986, 1974; Martins 1959a, 1958b; barnardes 1970, Estermann 1963, Gonsalves 1983, Maqueres 1985, Bradshaw 1965, Cabral 1975). For example, kiKongo has *cristo > kidisiu, cruz > kuluni, ingles > ngelesi, franco > fudândika, trombeta > tulumbaia, etc.;* kiBundu has *claro > catalo, Claudio > Caludio; Swahili has *brea > brecu, ftiltha > furutile, praca > baraza, franga > faranga, fransa > foronya, lacre > lakiri, etc. but also assimilated Cristo > Kisto, padre > padrepadiri, etc. Among Mozambican languages, we have *sacramento > Chope sakramento, brinco > Macua brinco, blusa > Macua bulusa, broca > Macua eporoka, cobre > Macua kobir, blafusia > Chitianja blafusia, but bruno > Chitianja bulusa.* On the other hand, some West African languages have easily incorporated *obstruent+liquid combinations in borrowed words, even though such clusters are absent in the native vocabulary. Thus for example we find *cobir > Temne kobir, cobre > Limba kibir, Mandinka kopor, Susu kobir; frasco > Limba Tenne frasko; preta > Mandinka prate; udro > Temne a-bithra, Limba bu-bithra, Bis brick > ibirkir, sokos sokos, cruz > Ewe akuzu, (French) matap > malato, Twi school > suku, glass > firaar, etc. Yoruba has adopted English borrowings in a similar fashion (Salami 1972): *gráma (but also giwáma) < gramm (an obviously technical term), but bára > bara, aeropláne < aeróplane, báli > blue, fíru > free, biriki > brick, skíluki > school, supínku > spoon, fíeli > fail, milíkki > milk, and even báliwéki > glucose.* These examples show that adaptation of European onset clusters and coda consonants by speakers of African languages was not a uniform affair, even within the same language. Although few instances of creation or retention of coda consonants in Africanized Spanish or Portuguese is found, even among those relatively few African languages which tolerate syllable-final consonants, responses to Romance phonotactics oscillate between the insertion of epenthetic vowels and the elision of the coda consonants. The generalization that paragogic vowels were most frequent after stressed syllables while coda weakening prevailed in unstressed syllables is quite robust, although not without exceptions. Treatment of onset clusters is more diverse; the generalization that loss of the liquid was more common in unstressed syllables is broadly based, but in stressed syllables, responses alternated between vocalic epenthesis and elision of the onset cluster, even in African languages whose patrimonial vocabulary contained no such clusters. One very common option was neutralization of /r/ and /l/ in the onset, with [ø] being cross-linguistically the preferred outcome. Interchange of /l/ and /r/ in the syllabic onset occurred sporadically in Ibero-Romance, although the shift of /l/ to /r/ was much more frequent (see Torreblanca 1989a). The same shift of /l/ > [ø] in onset clusters occurred in Afro-Portuguese pidgin, particularly in contact with Bantu languages. This modification became solidified in São Tomé creole: *tres > têli three,* *prata > plata silver,* etc. These examples suggest that in a very real sense, [ø] was the preferred outcome of the neutralization of /l/ and /r/ in Afro-Iberian contact languages. Thus [ø] can be considered more harmonic than [r], and conversion of /r/ to [ø] interacted with vocal epenthesis and elision of the liquid in resolution of *obstruent+liquid* onset clusters in Afro-Iberian speech.

**A constraint-based analysis of epenthesis vs. elision in Afro-Iberian language**

Coda consonants and onset clusters in Afro-Iberian pidgins and creoles suffered a variety of modifications, all of which are characterized as achieving congruence with the phonotactic patterns of the substrate language(s). The modifications involve the
complex interaction among processes of phonological addition, subtraction, and substitution, with more than one outcome being possible for the same word or combination under slightly different circumstances. This situation is best handled within the framework of Optimality Theory, in which derivational rules are replaced by ranked constraints. In Optimality Theory all constraints can potentially be violated (except perhaps for the most highly ranked constraint), but violations produce scalar judgments of acceptability in direct correlation with the relative ranking of the constraints. Most constraints are drawn from universally available phonological patterns (although some processes are so unique as to require constraints not likely to be found elsewhere), while the relative ranking of the constraints varies among languages, dialects, and sociolinguistic settings, as well as potentially changing across time. To the extent that adaptation of Spanish and Portuguese words into African languages exhibits the same relative interaction of constraints as Afro-Iberian contact languages, the latter will gain in credibility as legitimate manifestations of this forced cohabitation of European and African languages. To this extent, a number of constraints affecting onset and coda consonants will be defined, and the data from Afro-Iberian phonological modifications will be fitted against a matrix of ranked constraints.

1. The first constraint is NO CODA (*CODA), which disallows coda consonants. This constraint is widely exemplified cross-linguistically and is highly ranked in many languages. In Afro-Iberian linguistic encounters, *CODA is one of the primary factors motivating phonological modification.

2. NO COMPLEX ONSET (*COMPLEX) disallows consonant clusters in the syllable onset. This constraint is also characteristic of many language families, and is part of a broader constraint disallowing complex groups in general.

3. Optimality theory contains constraints which disfavor epenthetic elements, i.e. material in the output which does not correspond to input material. The general constraint against such added material is FILL (or in Correspondence Theory, DEP; McCarthy and Prince 1985).

4. The constraints of Generalized Alignment (McCarthy and Prince 1993), in particular ALIGN (Word, R, G, R) (ALIGN-R), require that the right boundary of a word correspond to the right boundary of a syllable. This constraint interacts with constraints against coda consonants by allowing consonants originally in the coda to re-emerge as onsets of a following syllable following addition of an epenthetic vowel. In the Afro-Iberian analysis, ALIGN constraints are redundant, since the interaction of the MAX and DEP constraints fully account for all possible configurations.

5. The Afro-Iberian data demonstrate that the faithfulness constraints responsible for vocalic epenthesis and consonantal deletion crucially depend upon the stress configurations (material in stressed syllables is preserved, while 'offending' consonants in atomic syllables are deleted). However simple identity constraints are not sufficient to account for this behavior, even constraints tailored to stressed syllables, such as Beckman (1998: 131)'s Identity σ(F): 'Output segments in a stressed syllable and their input correspondents must have identical specifications for the feature (F)'. This constraint implies that both linear order and syllabic constituency is preserved, which does not happen in the Afro-Iberian cases. Closer to the observed Afro-Iberian situation is Beckman (1998: 212)'s MAX-POSITION: 'Every element of S has a correspondent in some position P in S'., Despite this very general formulation, which theoretically permits not only epentheic segments but also alterations of the linear order of segments, all of Beckman's examples (typically maximal syllabification of consonant clusters, or distribution of vocalic features across several vowels) involve preservation of individual features. For maximal syllabification, the MAX-POSITION constraints entail retaining the input syllable entirely, while overriding constraints disallowing complex onsets or codas. When discussing Tamil epenthesis, Beckman explicitly states (p. 256) that 'epenthesis, which would draw a coronal segment out of the root-initial syllable (in violation of MAX-σ) ...', thus acknowledging that addition of material not present in the input is not consistent with this interpretation of MAX. Moreover, Beckman's interpretation of positional faithfulness is to achieve prominence of certain positions in the output: 'In essence, positional MAX constraints favor maximal packing of input structure into a prominent output position' (p. 212). In the Afro-Iberian data under consideration, however, it is the prominence of the input that is at stake: all the material in syllables stressed in the input is retained in the output, but not always in the same syllable, nor in the stressed syllable of the output. The phonological reanalysis of Iberoromance words by speakers of African languages often eliminates tonic stress altogether in favor of a tonal system which at best placed a high tone on the syllable corresponding to the nucleus of the main stressed syllable of the input word. Thus the need to maintain all the phonological material in each input syllable was counterbalanced by universal constraints against adding or deleting segments (processes which would be required in order to satisfy the constraints against codas and complex onsets widely found in African languages). In this fashion, stressed input syllables survived—albeit in modified form—whereas unstressed syllables suffered various forms of truncation. Thus in order to account for Afro-Iberian contact language formation, the original sense of MAX-POSITION must be retained: all elements of the input domain (in this case a stressed or unstressed syllable) corresponds to an element in some position in the output. However, linear reordering and resyllabification are freely allowed.

In the case of Afro-Iberian adaptations, two specific faithfulness constraints interact with input phonological material: MAX (5), requiring that all material in an unstressed syllable be retained in some form, and MAX (6), requiring that all material in the original stressed syllable be retained in some form. These faithfulness constraints based on syllables take the place of the generalized faithfulness constraints FAITH-C and FAITH-V, which do not distinguish between stressed and unstressed syllables.

Representative analyses

The tableaux for coda consonants (typically word-final but occasionally word-final) uses the MAX (5) constraints to distinguish between the elision of the coda consonant (occurring in unstressed syllables) and addition of a paragogic vowel (occurring with stressed final syllables).
### Tableau 1: Coda consonants in stressed (final) syllables

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<tr>
<th>/diós/</th>
<th>*CODA</th>
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<tr>
<td>dió</td>
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<td>w diós</td>
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### Tableau 2: Coda consonants in unstressed (final) syllables

<table>
<thead>
<tr>
<th>/lápis/</th>
<th>*CODA</th>
<th>DEP</th>
<th>MAX (ό)</th>
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<tbody>
<tr>
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</tbody>
</table>

As tableaux 1-2 illustrate, stressed and unstressed syllables behave differentially with respect to injunctions against epenthesis and deletion. In essence, preservation of all material in a stressed syllable (the constraint MAX (ό) is ranked high enough to override the prohibition against epenthesis (DEP), as well as the constraint against resyllabification (ALIGN-R)). In unstressed syllables, however, preservation of input material (MAX (ό)) is ranked below DEP (and trivially below ALIGN-R), thus making consonantal elision the most harmonic result. No segmentally-based constraints (e.g., FAITH-C, FAITH-V) will account for the differential behavior of stressed and unstressed syllables.

A scenario similar to that used to account for coda consonants handles vocalic epenthesis vs. liquid elision in OBSTRUENT + LIQUID onset clusters. In this case, preservation of material in stressed syllables is ranked higher than constraints against epenthesis, while in unstressed syllables the prohibition of epenthesis takes precedence over the faithfulness requirements. There is also a constraint MAX (ό), which disfavors liquid elision in word-initial syllables, whether they are stressed or unstressed (cf. Beckman 1998 for examples from other languages in which root-initial position is privileged).

### Tableau 3: Onset clusters in (word-final) unstressed syllables

<table>
<thead>
<tr>
<th>/negro/</th>
<th>*COMPLEX</th>
<th>DEP</th>
<th>MAX (ό)</th>
</tr>
</thead>
<tbody>
<tr>
<td>negro</td>
<td>!*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>w negro</td>
<td>!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>negero</td>
<td>!*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Tableau 5: Onset clusters in word-initial syllables

<table>
<thead>
<tr>
<th>/trabaxo/</th>
<th>*COMPLEX</th>
<th>MAX (ό)</th>
<th>DEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>trabaxo</td>
<td>!*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tabaxo</td>
<td>!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>w trabaxo</td>
<td>!*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the case of metathesis, such as escola > sikola, the syllabic faithfulness constraints are not as obviously satisfied, since while all phonological material in the input is present in the output, syllabic constituency has been altered: coda consonants become onset consonants. In the epenthesis of vowels in onset clusters, syllabic constituency is maintained. An additional constraint, MAX-o, requires that coda consonants remain as coda consonants, while onset consonants remain as onsets. A word such as escola, whereas the initial /e/ is predictable in Ibero-Romance, and therefore not present underlyingly, prothetic vowels are not part of the phonology of African languages. The input to phonological restructuring in Afro-Iberian languages would then be the unsyllabified string /eskola/. However, even if the input is presumed to have been /skola/, the constraints disallowing codas and complex onsets, together with the relatively low-ranked prohibition against epenthesis, will produce the same results. The interaction of the constraints is as follows:

### Tableau 6: Metathesis in word-initial /SC/ clusters

<table>
<thead>
<tr>
<th>/eskola/</th>
<th>*COMPLEX</th>
<th>MAX-WORD</th>
<th>*CODA</th>
<th>DEP</th>
<th>MAX-o</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-skola</td>
<td>!*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e-si-kola</td>
<td>!</td>
<td></td>
<td>!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>skola</td>
<td>!*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kola</td>
<td>!*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e-skola</td>
<td>!*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>w si-kola</td>
<td>!*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Forms arising from metathesis of the input, such as sikola < escola respect all the major constraints of Afro-Iberian language; indeed, if the input is presumed to be simply / skola/, then the issue of altering the linear order of input segments does not arise. Even if /eskola/ is posited as the input, only a low-ranked constraint allowing for linear order to be reversed completes the derivation.

The phonology of epenthesis/elision in pidginization and creolization

The preceding section demonstrates only one set of options available in Afro-Iberian contacts for the adaptation of Spanish and Portuguese words. Individual outcomes varied considerably, reflecting reordering of relevant constraints, and at times suppression of particular constraints. Specific outcomes were conditioned by the phonotactic patterns of substratum languages, but also by the nature of the linguistic contact. Transitory and highly asymmetrical contacts (e.g. a rudimentary pidgin picked up on a slaving ship or on a large plantation) would result in the least accommodation of Ibero-Romance patterns to prevailing African phonotactics. Wholesale loss of codas and even onset consonants was normal in such conditions, often at the expense of all syllabic faithfulness constraints. As language contact became more sustained, or as Spanish and Portuguese words entered African languages, a greater degree of phonological restructuring ensued; it was at this point that epenthetic vowels were used most frequently. Finally, if the Afro-Iberian pidgin or creole or the African language absorbing Ibero-Romance borrowings remained in contact with the lexifier language for a long period of time, thus increasing the Africans’ awareness of Romance phonotactic patterns, a greater tolerance for unmodified Ibero-Romance codas and onset clusters ensued. Early and still-surviving Afro-Iberian languages consistently display this pattern.

The first stage, which began in the final years of the 15th century for Afro-Portuguese pidgin and perhaps half a century later for Afro-Hispanic pidgin, also coincides with the earliest transitory borrowings of Portuguese words into African languages. There is little direct evidence of the first Afro-Iberian contact languages, formed instantly during chance encounters, with Africans often hearing a Portuguese or Spanish word only a few times and truncating consonants massively to quickly arrive at a CV-CV pattern. This massive syllabic reduction can sometimes be heard spontaneously when speakers of African and other languages containing only CV syllables encounter Spanish or Portuguese for the first time. A few isolated and vestigial Afro-Hispanic enclaves exhibit forms which hint at earlier stages in which onset clusters and codas were eliminated wholesale: the unusual Afro-Dominican dialect studied by Green (1997), the vestigial Afro-Peruvian dialects of the southern coast (Cuba 1996, Gálvez Ronceros 1975, Lipski 1994b; cf. footnote 3), the speech of the NEGROS CONOS OF PANAMA (Lipski 1990). The Gulf of Guinea creoles Angolares, PRINCIPIES and ANIBONGES also exhibit massive elimination of onset clusters through elimination of the liquid consonant (although preferring paragogic vowels to elimination of coda consonants in final stressed syllables), thus potentially representing a partial preservation of the very earliest stages of Afro-Lusitanian language contact.

The second stage of phonological evolution, in which epenthetic vowels break up onset clusters and resyllabify coda consonants, particularly in originally stressed syllables, is widely attested in former and current varieties of Afro-Iberian language. The Gulf of Guinea PORTUGUESE-derIVED CREOLES provide consistent evidence of paragogic vowels appearing after Portuguese coda consonants; Portuguese onset clusters are more generally tolerated in SAO Tomense—which has been in closer contact with Portuguese—while there is considerable reduction in the remaining Gulf of Guinea creoles, whose ongoing contact with Portuguese has been minimal over the past few centuries. Saramaccan words of Portuguese origin (the earliest lexifier language) also routinely inserted paragogic vowels to eliminate syllabic codas (cf. Alleyn 1980: 62-66, 175 for English-based creoles). Early Afro-IBERIAN PIDGIN from 16th century Portugal and Spain also made ample use of paragogic vowels, as demonstrated above. During the late 18th and early 19th century, massive importation of African-born bozales into Argentina, Uruguay, Peru, and Brazil resulted in a new round of contact-induced AFRO-IBERIAN VARIETIES in which Ibero-Romance syllables were restructured to fit African phonotactics (in this case, predominantly from the Bantu family), through liberal use of paragoge and coda reduction.

Creoles which remained in closer contact with Spanish or Portuguese in general show little paragoge or onset cluster reduction. PAPEMBO, evidently formed in the early 18th century and in constant contact with Caribbean Spanish, retains relatively few cases of paragoge or epenthesis, and no breakup of onset clusters. PALENGUE, formed roughly at the same time and never far-removed from coastal Colombian Spanish, has a few instances of onset cluster reduction, but very few cases of syllable-final paragoge or epenthesis. CAPE VERDEAN CROOLO, always in contact with Portuguese, exhibits no consistent paragoge or onset cluster reduction and only minimal coda reduction. Even GUINEA-BISSAU KRIYOL, further removed from contact with Portuguese, makes almost no use of paragoge. As language contact becomes more sustained, Spanish and Portuguese words no longer underwent phonological restructuring, reflecting the fading of constraints originally motivated by African phonotactic configurations. Strictly speaking this is not necessarily ‘creolization,’ since nothing suggests that originally more African-like adaptations of Ibero-Romance words shed their paragogic vowels or reacquired elided consonants to become more like their superstrate counterparts.

A comparison between existent Afro-Iberian creoles and Portuguese borrowings into African languages reveals a high degree of congruence, taking into account the wide range of substratum languages involved in both cases. This in turn reinforces the notion that optimization of input language was operative both in creole formation and during borrowing, i.e. that a broad cross-section of African phonotactic patterns was directly responsible for phonological restructuring during creolization.

Notes

1 Vernacular Brazilian Portuguese has often been regarded as a semi-creole (e.g. Holm 1987, Tarallo 1988), but little direct evidence links contemporary varieties to putative earlier stages of more restructured language. Literary imitations of earlier pidgins are
fraught with the usual difficulties which accrue to the recovery of marginalized sociolects through literary texts, namely the high degree of parody and stereotyping practiced by most authors, together with the dubious levels of awareness of true Afro-Portuguese speech on the part of many authors.

2 A few cases, such as sicoba < escoba, may represent paragogic vowels inserted after the loss of the first vowel (e.g., escoba > sicoba > sicoba), rather than metathesis. This is especially true in the case of borrowings from Portuguese, where reduction of unaccented vowels appears to have had an early start (cf. Naro 1971). Regardless of the process involved, the retention of /s/ in the modified forms attests to a relatively strong pronunciability in both Spanish and Portuguese at the time of borrowing. Afro-Brasilian metathesis follow the same pattern; some examples are: fruta < fruta (Ramos 1935:248), fulosin < fufusinha (Macabio Filho 1964:109), inconitir < incontrado (Jeroslow 1974:53), praque < porquê (Ramos 1935:52), trucado < locar (Ramos 1935:52), verdad < verdade (Raimundo 1933:71).

3 Contemporary vestigial Afro-Peruvian dialects contain examples of the reduction of onset clusters (Gálvez Ronceros 1975); in this dialect, word-initial onset clusters are reduced (trabajo > tabajo) as well as onset clusters in word-final stressed syllables (sembrío > sembío), indicating abandonment of all MAX-0 constraints in favor of a maximally simple system which eliminates all consonants responsible for codas or complex onsets. This strategy is not common among Afro-Iberian contact varieties, although it occurs routinely in Spanish and Portuguese child language.

... ponía al que su boca en una mier, que su diente es otra mier, su palabra un montón de mier ... mier esa colombe e mier diñado mirando trabajo ajeno ... Que nunca se vieron hombres que le recule al dervío ... Dijo que tampoco sabe regá, que laqau en su mano es agua era que se le escapa e lo suco anegando el sembío y haciendo un charco tremando.

It is not possible to determine whether the Afro-Peruvian data represent a more 'evolved' or a more 'conservative' form of contact language, since in principle the most 'radical' pidginization—rigidly adhering to a CV-CV output template) could just as feasibly delete consonants as insert epenthetic vowels.

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