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EPENTHESIS VS. ELISION IN AFRO-IBERIAN LANGUAGE

A CONSTRAINT-BASED APPROACH TO CREOLE PHONOLOGY

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0. *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 pidgins 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: Srnan, Saramaccan, Berbice Dutch, Annobonese (fa d'ambú) and Jamaican Maroon language have phonological patterns much more like their postulated substrata than Cape Verdian Crioulo, Papiamentu, 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. 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-Romance 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 yielded constraint rankings that are closer but not identical to those characterizing Ibero-Romance.

1. *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 Afro-Lusitanian creoles. Some examples are: (kiKongo) *doutor* > *dotolo* 'doctor,' *Cristo* > *kidisitu* 'Christ'; (kiMbundu) *claro* > *calalo* 'clear,' *rapaz* > *lapassi* 'boy.' Portuguese preconsonantal /s/ was not always salvaged by addition of a paragogic vowel, but was sometimes lost, as in kiKongo *fofolo* < *fósforo* 'match'; *kipeelo* < *espelho* 'mirror'; *lupitaalu* < *hospital*. Metathesis was an occasional option: *escoba* > kiKongo *sikoba* 'broom,' *escola* > kiMbundu *sicora* 'school.' 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 *kilapi* < *lápis* 'pencil'; *vokolo/ukolo* < *óculos* 'eyeglasses'; *woolo* < *ouros*; *zikopu* < *copas* 'suits of playing cards.' Similar developments are found in Afro-Lusitanian creoles, particularly those of the Gulf of Guinea (Ferraz (1979, 1984), Granda (1994b), Vila (1891), Barrena (1957), Maurer (1995), Günther (1973), Schuchardt (1888:250)). To cite

only a few examples, from São Tomense (ST), Principense (P), Angolar (A), and Annobonese (Ann): *arroz* > ST *loso*, Ann. *aloso*, P. *urosu* 'rice'; *barril* > ST *balili*, A *bariri* 'barrel'; *mais* > ST, P, A *mashi* 'more.' 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 (1935:248)), for example: *Frrmino* > *Firimino*; *Fulgécio* > *Fulgenço*. Alleyne (1980:45-48) and Holm (1988:110-11) document the extensive use of paragogic vowels in other African-influenced creoles. Paragogic vowels were also common in literary imitations of the *língua de preto* found in Portugal from the middle of the 15th century until the early 19th century. Some examples include (Brásio (1944), Costa e Sá (1948), Lipski (1994a), Tinhorno (1988)): *boso* < *vos* 'you'; *deoso* < *deus* 'God'; *senhoro/sioro* < *senhor* 'sir' *furutá* < *furtar* 'to steal'; *doso/dosso* < *dois* 'two.' Active use of paragogic vowels was not likely to have formed part of a nativized Afro-Portuguese vernacular, but the textual evidence suggests that some fossilized forms may have remained, including *dioso*, *sioro*, *Furunando*, and possibly *boso* (Lipski (1994a)). Many early examples illustrate the use of vowel harmony: *boso* < *vos*, *deoso* < *deus*, *Furunando* < *Fernando*, *faramosa* < *formosa*, *Purutugá* < *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 (Baird (1975), Birmingham (1970), Goilo (1953), Martinus (1996)). This phenomenon would disappear together with the active use of paragogic vowels. Contemporary vernacular Angolan Portuguese also shows evidence of both elimination of coda consonants and paragogic vowels (Mattos e Silva (1904), Lipski (1994a, 1995b)). Spanish Golden age texts provide many examples of paragogic vowels in the *bozal* imitations (Lipski (1995a), Dunzo (1974), Chasca (1946)): *amore/amolo* < *amor* 'love'; *bicicochos* < *bizcochos* 'cakes'; *siñoro/seoro/sinoro/siñolo/zeolo* < *señor* 'sir. 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* < *dios* is an archaic leftover (also *sibirí* < *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 (Friedemann and Patiño (1983), Granda (1994a)). Papiamentu primarily used paragoge with consonant-final Dutch words (e.g. *hopi* < *hoop* 'very'), and very seldom employed epenthesis (e.g. *delegá* < *delgado*). Remnants of paragogic vowels occasionally turn up in vestigial Afro-Hispanic language throughout Latin America. For example Althoff (1994) found *árbolo* < *árbol*, *motoro* < *motor*,

caloro < *calor*, 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)), and occasionally occurs in rural Puerto Rico.

2. *Onset clusters in Afro-Iberian language*

Another set of processes affecting Afro-Iberian contact language is the reduction of onset clusters (invariably OBSTRUENT + LIQUID 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 (cf. Brenner (1993) for more examples). 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, *ombe* < *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 *bolocado* < *brocado*, *ezturumento* < *instrumento*, *falauta* < *flauta*, and *salamandera* < *salamandra*. A handful of cases is found in Argentina/Uruguay at the turn of the 19th century: *balanco/baranco* < *blanco*, *conterera* < *Contreras*, *ofelenda* < *ofrenda*, *otoros* < *otros*, *pobere* < *pobre*, *quilitiano* < *cristiano*, *sabelemo* < *sabremos*. These examples may reflect the fact that, as the slave trade to the Río de la Plata region peaked in the late 18th century, a large proportion of the Africans were transshipped 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*, **quistno* < *cristno*, 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 (*hombe* < *hombre*, *nego* < *negro*, etc., do not appear until the 19th century).[1]

[1] A few cases, such as *sicoba* < *escoba*, may represent paragogic vowels inserted after the loss of the first vowel (e.g., *escoba* > *scoba* > *sicoba*), rather than metathesis. This is especially true in the case of borrowings from Portuguese, where reduction of unstressed vowels appears to have had an early start (cf. Naro (1971)). Regardless of the process involved, the retention of /š/ in the modified forms attests to a relatively strong pronunciation in both Spanish and Portuguese at the time of borrowing. Afro-Brazilian metathesis follow the same pattern; some examplesare: *fruta* < *furta* (Ramos (1935:248)), *Fulosina* < *Eufrasina* (Machado Filho (1964:109)), *incrontá* < *incontrá* (Jeroslow (1974:53)), *pruquê* < *porquê* (Ramos (1935:52)), *trocá* < *tocar* (Ramos (1935:52)), *vredade* < *verdade* (Raimundo (1933:71)).

Among surviving Afro-Iberian creoles, onset clusters are generally maintained in Cape Verdian Crioulo, Guinea-Bissau Kriyôl, Palenquero (except for isolated words such as *ngande* < *grande*), and Papiamentu. In the Gulf of Guinea, the creole of Sno Tomé has maintained most Portuguese onset clusters, although all /Cr-/ clusters have been changed to /Cl-/. However, among the remaining creoles (Annobón, Príncipe, Angolar), elimination of the liquid in onset clusters was the rule: Annobonese *taba* < *trabalhar*, *kaba* < *quebrar*, *pato* < *plato peto* < *preto* (Granda (1994b: 432-3)); Angolar *kubi* < *cubrir paa/paaya* < *praia*, *paata prata*, *pisipi* < *príncipe*, *teme* < *tremer* (Maurer (1995)); Principe *banko* < *branco*; *faku* < *fraco*, *gani* < *grande*, *kebá* < *quebrar*, *petu* < *preto*, *tabwé* < *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.[2]

3. *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 (Kiraithe and Baden (1976), Prata (1983), Bal (1968, 1974), Martins (1958a, 1958b), Bernardes (1970), Estermann (1963), Gonçalves (1983), Marques (1983), Bradshaw (1965), Cabral (1975)). For example, Swahili has *brea* > *bereu*, *flotilha* > *furutile*, *praça* > *baraza*, *franga* > *faranga*, *fronha* > *foronya*, *lacre* > *lakiri*, etc. but also assimilated *Cristo* > *Kristo*, *padre* > *padre/padiri*, etc. Among Mozambican languages, we have

[2] 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-internal stressed syllables (*sembrío* > *sembío*), indicating abandonment of all MAX-F 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. 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.

sacramento > Chope *sakramentu*, *brinco* > Macua *Pbrinko*, *blusa* > Macua *bulusa*, *broca* > Macua *eporoka*, *cobre* > Macua *kobiri*, *blasfemia* > Chinianja *blasfemya*, but *bruto* > Chinianja *bulutu*.

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 *cobrar* > Temne *kopra*, but *cobre* > Limba *kobiri*, Mandinka *koporo*, Susu *kobiri*; *frasco* > Limba, Temne *frasko*; *prata* > Mandinka *prata*; *vidro* > Temne *a-bithra*, Limba *hu-bitira*, Bisi *brick* > *ibiriki*, *socks* > *esokisi*, *cruz* > Ewe *akluzu*, (French) *marteau* > *malato*, Twi *school* > *suku*, *glass* > *firase*, etc. Yoruba has adopted English borrowings in a similar fashion (Salami (1972)). 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.

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

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). This situation is best handled within the framework of Optimality Theory, in which derivational rules are replaced by ranked constraints. 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 legimate 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, F, 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 atonic 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 s'(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's (1998:212) **MAX-POSITION**: 'Every element of S_1 has a correspondent in some position P in S_2.' Despite this very general formulation, which theoretically permits not only epenthentic 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-s_1) ...', 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 syllable, nor in the stressed syllable of the output. The phonological reanalysis of Ibero-Romance words by speakers of African languages often eliminated 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. 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 (F7)**, requiring that all material in an unstressed syllable be retained in some form, and **MAX (s')**, 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.

5. *Representative analyses*

The tableaux for coda consonants (typically word-final but occasionally word-internal) uses the **MAX (F)** 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

	/diós/	*CODA	MAX (σ′)	DEP
	diós	*!		
	dió		*!	
+	dióso			*

Tableau 2: Coda consonants in unstressed (final) syllables

	/lápis/	*CODA	DEP	MAX (σ′)
	lápis	*!		
☞	lápi			*
	lápisi		*!	

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 (s')) 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 (s7)) 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 requirement. There is also a constraint **MAX (s_1)**, 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-internal) stressed syllables

	/ofrenda/	*COMPLEX	MAX (σ′)	DEP
	o-frenda	*!		
	o-fenda		*!	
☞	o-ferenda			*

Tableau 4: Onset clusters in (word-internal) unstressed syllables

	/negro/	*COMPLEX	DEP	MAX (σ′)
	negro	*!		
☞	nego			*
	negero		*!	

Tableau 5: Onset clusters in word-initial syllables

	/trabaxo/	*COMPLEX	MAX (σ′)	DEP
	trabaxo	*!		
	tabaxo		*!	
☞	tarabaxo			*

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-s_{struc}**, requires that coda consonants remain as coda consonants, while onset consonants remain as onsets. In 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 language 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

/eskola/	*COMPLEX	MAX-WORD	*CODA	DEP	MAX-$_{\sigma struc}$
e-skola	*!				
e-si-kola				*!	
skola	*!	*			*
kola		*!			(*)
es-kola			*!		
☞ si-kola					*

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.

6. *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 coda 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. Mühlhäusler (1997:133-4) gives examples from Suriname creoles which also support the preceding conclusions. Maroon creoles such as Boni, which were rapidly isolated from English, prefer consonant cluster reduction (e.g. *trust* > *toosi*, *drink* > *dingi*), while Srnan, which was in closer contact with English, retained initial clusters (although adding final paragogic vowels): *trust* > *trusu*, *drink* > *dringi*. Similarly, early Melanesian English pidgin eliminated initial consonant clusters: *steamer* > *tima*, *station* > *tesen*.

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)), the speech of the negros congos of Panama (Lipski (1990)). The Gulf of Guinea creoles Angolar, Principense and Annobonese 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 São 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. Alleyne (1980:62-66, 175) for English-based creoles). EARLY AFRO-IBERIAN PIDGIN from 16th century Portugual 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.

The third stage, creoles which remained in closer contact with Spanish or Portuguese, in general show little paragoge or onset cluster reduction. PAPIAMENTU, evidently formed in the early 18th century and in constant contact with Caribbean Spanish, contains relatively few cases of paragoge or epenthesis, and no breakup of onset clusters. PALENQUERO, 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 VERDIAN CRIOULO, always in contact with Portuguese, exhibits no consistent paragoge or onset cluster reduction and only minimal coda reduction. Even GUINEA-BISSAU KRIYÔL, 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 'decreolization,' 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.[3]

[3] Rivera-Castillo (1998) gives a constraint-based analysis of Papiamentu suprasegmentals which demonstrates another form of interaction between substrate and superstrate phonological systems.

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