ON THE SYLLABLE STRUCTURE OF ENGLISH PIDGINS AND CREOLES

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ABSTRACT

This thesis is an optimality-theoretic investigation of syllable restructuring in the Atlantic and Pacific English-lexicon pidgins and creoles, both in their earlier stages and in the modern varieties.

The theoretical framework and the methodology are presented in chapter **2**.

The next three chapters examine the adjustments that occur in the English pidgins and creoles in two syllabic positions: the onset and the coda. Thus, chapter **3** looks into the strategies used to resolve illicit /s/-initial onset clusters. Chapter **4** investigates the fate of obstruent + sonorant onset clusters, to the exclusion of /s/-initial ones. The clusters at issue are of two types: obstruent + glide, and obstruent + liquid. Particular attention is paid to the treatment of obstruent + liquid onset clusters in the creoles of Surinam, a matter of some dispute in the literature. Syllable restructuring in coda position is discussed in chapter **5**, in which reflexes of etyma with both complex and simple codas are analyzed.

The last chapter places the findings in the wider context of their implications for phonological theory and for the study of language contacts, as well as of the relevance of optimality theory to the study of syllable restructuring in the English pidgins and creoles. The issues discussed include the role of markedness, the relation between constraints on syllable structure in the English pidgins and creoles and in their respective substrate languages, syllable restructuring in the Atlantic Dutch and French creoles, and a comparison of syllable restructuring in first and second language phonology, in loanword phonology, and in the English pidgins and creoles.

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1

Introduction

The present thesis investigates a number of aspects of syllable structure in the English pidgins and creoles. Included are representatives of both the Atlantic and the Pacific groups. The phenomena analyzed are illustrated with examples from both earlier stages and the modern varieties.

I have chosen to look into the syllable structure of English pidgins and creoles for three reasons. First, as noted by, among others, Arends, Muysken and Smith (1995) or Singh and Muysken (1995), phonology is a relatively neglected area in pidgin and creole linguistics. As put by Arends, Muysken and Smith (1995, p. 327), for instance, "[w]hat continues to be striking is that so little is published in pidgin/creole phonology" and "a comparison with 'non-creole linguistics' [...] is sobering". The very title of Singh and Muysken's 1995 paper "Wanted: a debate in pidgin/creole phonology" is also suggestive in this respect. Second, Arends, Muysken and Smith (1995, p. 327) list among the areas in the phonology of pidgins and creoles that demand urgent scrutiny vowel epenthesis, paragoge, and syllable structure in general, i.e. precisely some of the issues addressed in this thesis. Third, recent phonological theory (see e.g. Selkirk 1982, Booij 1984, Durand 1990, Goldsmith 1990, Carr 1994, Kenstowicz 1994, Roca 1994, Blevins 1995, van der Hulst and Ritter 1999, Gussmann 2002), has frequently placed syllable structure at the very centre of their concerns. This is particularly true of the initial stages in the elaboration of optimality theory (McCarthy and Prince 1993, Prince and Smolensky 1993), the framework adopted in this thesis.

The thesis is organized as follows. In chapter **2**, "The theoretical framework and methodology", I first briefly present the conceptual and formal apparatus of optimality theory, developed e.g. in McCarthy and Prince (1993), Prince and Smolensky (1993), Kager (1999), and McCarthy (2003). I also briefly illustrate some of its applications to areas such as the acquisition of first and second language phonology, variation, co-phonologies, and sound change. The last part of this chapter is concerned with problems of methodology. I discuss the sources, the principles underlying the selection and presentation of examples, and the orthography or system of transcription used.

The following three chapters look into the adjustments occurring in the English pidgins and creoles in two syllabic positions: the onset and the coda. Chapter **3**, "The treatment of /s/-initial onset clusters", examines the strategies to which the varieties considered appeal in the resolution of illicit onset clusters beginning with /s/ in the corresponding etyma. In chapter **4**, "The treatment of obstruent + sonorant onset clusters", I investigate the fate of two-consonant onset clusters, to the exclusion of /s/-initial ones. The clusters at issue are of two types: obstruent + glide, and obstruent + liquid. Particular attention is paid to the treatment of obstruent + liquid onset clusters in the creoles of Surinam, a matter of some debate in the literature. Chapter **5**, "The treatment of codas", is concerned with syllable restructuring in coda position. Reflexes of etyma with both complex and simple codas are analyzed.

In "Conclusions" I draw together some of the threads running through the previous chapters. I first discuss a number of issues regarding the role of markedness, from an optimality-theoretic point of view (see Kager 1999) and from the perspective of the ecology-sensitive model of markedness developed by Mufwene (in e.g. 1989, 1990 and 1991). Next, I look into the status (phonetic vs. lexical) of epenthetic vowels. The next topic is the relation between the constraints on syllable structure in the substrate languages and those holding in the English pidgins and creoles. I then compare syllable restructuring in the Atlantic English-, Dutch- and French-based creoles, which appear to share essentially the substrate languages. Next, evidence from syllable restructuring in the English pidgins and creoles considered is brought to bear on the issue of their genesis. As is known, creoles are claimed by some (e.g. Bickerton 1981) to be instances of first language acquisition under special circumstances, whereas others (more recently Muysken 2001) analyze creoles from the perspective of second language acquisition. I therefore compare syllable restructuring in pidgins or creoles and in the acquisition of first and second language phonology and in loanword phonology. Finally, I touch upon the relevance of optimality theory to the study of syllable restructuring in the English pidgins and creoles.

THE THEORETICAL FRAMEWORK AND METHODOLOGY

2.1 The theoretical framework

2.1.1 Introduction

The theoretical framework adopted here is the one provided by optimality theory. Optimality theory is an approach to phonology developed fairly recently (initially in Prince and Smolensky 1993; McCarthy and Prince 1993a). The outline that follows is based on Archangeli (1997, pp. 1–32), Roca (1997), Sherrard (1997), Prince (1998), Roca and Johnson (1999, pp. 584–629), Kager (1999), and Prince and Smolensky (2003).

Essentially, optimality theory is a constraint-based model of phonology. Constraints hold only for surface forms (called *output forms*) however. This illustrates the so-called *richness of the base*: no constraints hold at the level of underlying representations. Optimality theory is based on the *parallel evaluation* of possible *output forms* (also called *candidate forms*, *output candidates* or simply *candidates*) with respect to a ranked set of violable constraints. Any such candidate that does not comply with the constraints is rejected in favour of another output form which does. The constraints are said to be universal. Universal Grammar provides the set CON (from "Constraints"), from which phonologies are constructed.

Optimality theory accounts for the differences between the phonologies of different languages as follows. The constraints in CON are ranked differently in the various languages. The phonology of a given language is defined by the particular ranking of the set of universal constraints. This particular ranking is that language's *constraint hierarchy*. Importantly, and unlike previous models of phonology that also appeal to constraints, constraints are *violable*. The essential distinguishing feature of optimality theory is not that it is a constraint-based approach but rather that it allows violation of those constraints. Constraints may conflict with one another. If two constraints are contradictory, the one that is ranked higher has priority over the other one.

The selection of the output form runs as follows. For any underlying form (called input form) in the lexicon, a component GEN (from "Generator") of Universal Grammar freely generates a range of possible analyses for that input, i.e. an unlimited set of candidates. The latter are then evaluated by another module of Universal Grammar, EVAL (from "Evaluation") with respect to that language's constraint hierarchy. To sum up, for any given input and any given constraint hierarchy, a set of candidate forms is first generated and then evaluated. This determines the output associated with the input.

An optimality-theoretic phonology is thus an input-output mechanism. The architecture of such a phonology can be represented schematically as follows:

(1) GEN (input) ⇒ {candidate *a*, candidate *b*...candidate *n*}
(2) EVAL {candidate *a*, candidate *b*...candidate *n*} ⇒output

Two general forces interact in the selection of the output form. One of these is *faithfulness*. Faithfulness attempts to make the output form completely identical to the input form. Faithfulness is opposed by *markedness*. If the latter were not checked by faithfulness, all words of any language would be of the CV type, e.g. [ba]. Indeed, anything more complex than this structure would necessarily exhibit some degree of markedness. The interaction of faithfulness and markedness determines the selection of one output form. Both faithfulness and markedness consist of a set of constraints, drawn from CON. These constraints are differently ranked in the phonology of every language. Clearly, faithfulness constraints cannot all be ranked above all the markedness ones since this would lead to a full identity between the input form and the resulting output form.

In fact, one or several faithfulness constraints are outranked by one or several markedness constraints. Every such constraint is inspected, i.e. the candidates are checked whether they satisfy the requirements imposed by the respective constraint. Those candidates that fail to do so are eliminated. The process of selection continues until there remains one single candidate form. This is the *optimal form* (*optimal candidate*, *optimal output* or the *winner*). The optimal form is the only one of the original candidate forms left after the inspection of the language's constraint hierarchy. The optimal form itself may violate one or more of the lower ranked constraints. This illustrates the "fallacy of perfection": no output form is possible that satisfies all constraints. After the elimination of all the other candidate forms however, any such violation becomes irrelevant: the respective candidate form will still be the optimal form. Optimality is therefore defined as follows: an output is optimal if it incurs the least serious violations of a set of constraints taking into account their ranking.

The main architectural principles of optimality theory (see Sherrard 1997, pp. 46–48, and Kager 1999 pp. 18–27) are summarized in (3) through (7):

(3) *Universality*:
Constraints are universal. This is the equivalent of the requirement that constraints reflect universal linguistics tendencies[1]. A distinction is made between *active* and *inactive* constraints. The latter never have an impact on the language analyzed.

(4) *Violability*:
Constraints are violable, but violation must be minimal. Any such violation secures compliance with higher-ranked constraints. This is in accordance with the property of economy (Prince and Smolensky 1993, p. 27): banned options are available only to avoid violations of higher-ranked constraints and can only be banned minimally. However, not all violable constraints are violated in all languages. Since violation of inviolable constraints cannot be forced by a higher-ranked constraint, the former are said to be *undominated* in the language at issue.

(5) *Ranking*:
Constraints are ranked in a language-specific way. Constraints within a language are organized as follows: undominated constraints >> ranked active violable constraints >> inactive constraints. Ranking among undominated and inactive constraints is irrelevant. Conflicting active constraints must be ranked to secure selection of the optimal form. It follows that in no pair of conflicting constraints can both constraints be undominated in the phonology of one language. There is no relative ranking of active constraints which do not conflict. Whenever constraints cannot be ranked, due to a trivial lack of interaction, some arbitrary ranking is chosen. Within the constraint hierarchy, dominance relations are *transitive*: if constraint 1 >> constraint 2 and constraint 2 >> constraint 3 then constraint 1 >> constraint 3. Transitivity of ranking is instrumental in constructing ranking arguments.

(6) *Inclusiveness*:
GEN must not be unduly selective in generating output forms and must therefore include reasonable possible candidates[2].

(7) *Parallelism*:
All constraints pertaining to some type of structure interact in a single hierarchy. Parallelism requires that satisfaction of the constraints hierarchy should be determined by reference to all constraints and to all output forms.

The module EVAL evaluates the set of candidate forms generated by GEN. Conventionally, evaluation is encapsulated in constraint *tableaux*. A tableau contains the input form, the constraints and a number of potential output forms. The input form is given in the top left corner. Constraints are arranged horizontally in columns, in a descending order from left to right. The left-to-right ordering reflects their ranking. Candidate forms are placed vertically in rows, in random order. The cells contain violation marks * incurred by each candidate form. An asterisk * in a cell indicates that

[1] See, however, McMahon (2000, pp. 19–24).
[2] See Kager (1999, pp. 25–27) and McMahon (2000, pp. 29–30).

the candidate form in the corresponding row has violated the constraint heading the column. An asterisk followed by an exclamation mark *! shows that a candidate form has violated a constraint and is eliminated. Such a violation is said to be fatal. The optimal form is marked by the index ☞. Cells whose violation content is no longer relevant are shaded.

The standard format for a tableau for simple domination (with two candidates and two constraints only, for expository reasons) is shown below:

(8)

input	constraint 1	constraint 2
☞ candidate a		*
candidate b	*!	

The optimal candidate, marked by ☞, has no violations of the higher-ranked constraint (constraint *1*). This constraint is violated by the other output form. Candidate *b* is thus *suboptimal.* Even the optimal form, candidate *a*, has incurred a violation mark for constraint *2*. This violation is however irrelevant to the selection of the optimal form. The violation by candidate *b* of constraint *1* is already fatal, as indicated by the accompanying exclamation mark and by the shading of the cells whose violation content is thus no longer relevant. In the above example, candidate *a* is optimal since no other competing candidate fares better, i.e. satisfying both constraints (*1* and *2*). The violation of constraint *2* by candidate *a* is accepted since the higher-ranked constraint *1* is satisfied. That is, violation of a constraint is not, by itself, a sufficient ground for ungrammaticality. For a violation of some constraint to be fatal there has to be at least one other candidate that satisfies that constraint, being also equally good on all higher-ranked constraints. The tableau above illustrates how (simple) *domination* works: the higher-ranked of a pair of conflicting constraints (constraint *1*) takes precedence over the lower-ranked one (constraint *2*). The notation >> is used to signify domination: constraint *1* >> constraint *2*.

The case considered above involve *binary* constraints, i.e. which are either violated or not. A different situation obtains when a number of candidate forms violate one and the same constraint, to satisfy some other higher-ranked constraint(s), but one such output form violates that constraint more than the others. In such cases, it is the amount of violation that is decisive in the selection of the optimal form. Output forms with fewer violations of a constraint are preferred to those with more violations of the same constraint. This *multiple* (*gradient constraint* or *gradient*) *violation* is shown by the number of violation marks in the cells headed by the constraint at issue. Consider the tableau below. Constraint *1* is assumed to allow multiple violation.

(9)

input	constraint 1	constraint 2
☞ candidate a	*	*
candidate b	**!	

Inspection of candidate *b* leads to two violations of one and the same constraint (constraint *1*). The second asterisk is accompanied by the exclamation mark to show that the second violation is thus a fatal. Candidate *a* violates constraint *1* only once. Even though candidate *a* also violates constraint *2*, which candidate *b* does not, since the latter is outranked by constraint *1*, this is irrelevant to the outcome, as shown by the shading of the corresponding cells. Candidate *a* thus emerges as the optimal form since constraint *1* is ranked higher than constraint *2*.

If potential output forms incur the same number of violation marks for one constraint (and this is the minimal violation in the candidate set), then they are all passed on for evaluation by the next constraint down the constraint hierarchy.

(10)

input	constraint 1	constraint 2
☞ candidate a	**	
candidate b	**	*!

The tableau above thus illustrates a tie between candidates *a* and *b* on the higher-ranked constraint *1* with the lower-ranked constraint (constraint *2*) decisive for the selection of the optimal form (candidate *a*). In the case of a tie, the ranking of constraints *1* and constraints *2* cannot be determined from the actual output. This presupposes that the ranking of these constraints can be established on the basis of other forms.

Ties between candidates can also occur when competing output forms do not violate a higher-ranked constraint:

(11)

input	constraint 1	constraint 2
☞ candidate a		
candidate b		*!

All cases outlined so far illustrate *strict domination*: violation of higher-ranked constraints cannot be compensated for by satisfaction of lower-ranked constraints. Consider thus the tableau below:

(12)

input	constraint 1	constraint 2
☞ candidate a		**
candidate b	*!	*

Candidate *a* still emerges as the optimal form. Multiple violations of a lower-ranked constraint thus become irrelevant. On the other hand, candidate *b* is eliminated. The ranking of constraints cannot be compensated for by a smaller number of violations of a lower-ranked constraint (constraint *2*). Any output form which violates a higher-ranked constraint (which another output form does not violate) is eliminated.

Domination is strict also in the sense that violations cannot be added for different constraints. Two or more violations of lower-ranked constraints cannot be added to cancel out a single violation of a higher-ranked constraint:

(13)

input	constraint 1	constraint 2	constraint 3
☞ candidate a		*	*
candidate b	*!		

With two violations of lower-ranked constraints (constraints *2* and *3*) candidate *a* still comes out as the optimal form. Candidate *b* is eliminated, even though it incurs only one violation, since the constraint violated (constraint *1*) outranks the other two (constraints *2* and *3*).

The situations discussed so far involve a strict ranking of constraints. Strict ranking presupposes a conflict between constraints. In such cases a constraint is crucially ranked with respect to another. However, if e.g. two constraints do not interact, the ranking of one constraint with respect to the other is indifferent. Either of the two can outrank or be outranked by the other one. The absence of strict ranking is indicated by a comma placed between the constraints at issue. The tableau below illustrates the hypothetical ranking constraint *1* >> constraint *2*, constraint *3* >> constraint *4*, with constraints *2* and *3* not crucially ranked.

(14)

input	constraint 1	constraint 2	constraint 3	constraint 4
☞candidate a		*		*
candidate b	*!			
candidate c		**!		
candidate d		*	*!	

The dotted vertical line indicates that the constraints immediately on either side (constraints *2* and *3*) are not crucially ranked. Candidate *b* having already been disposed of by constraint *1*, candidates *c* and *d* would have been eliminated anyway irrespective of the ordering of constraints *2* and *3*. Indeed, candidate *a* incurs just one violation mark for constraint *2* (fewer than candidate *c*) and none for constraint *3* (fewer than candidate *d*) and emerges therefore as the optimal form.

As has become apparent from all the situations considered, lower-ranked constraints cannot be switched off by any higher ranked constraints. It follows then that any constraint, regardless of its position in the constraint hierarchy, is instrumental in selecting the optimal candidate.

(15)

input	constraint 1	constraint 2	constraint 3
☞ candidate a		*	
candidate b	*!		
candidate c		*	*!

In this example, even though constraint *3* is the lowest ranked in the hierarchy, it does determine the optimal output (candidate *a*).

2.1.2 Classification of constraints

2.1.2.1 Markedness constraints

Markedness constraints express cross-linguistic preference laws of some kind. This is consistent with the claim that the set of constraints in CON is part of Universal Grammar. Most of the various featural markedness constraints assumed in my analysis will be presented in the relevant sections. Here I will define and discuss only the prosodic markedness constraints most frequently made use of in the analysis.

The constraint NOCODA requires that syllables must not end in a consonant. Languages in which the constraint NOCODA is undominated have open syllables only.

(16) **NOCODA**: Syllables are open.

The constraint *COMPLEX prohibits the occurrence of more than one consonant in the onset and in the coda.

(17) ***COMPLEX**: no complex syllable margins.

*COMPLEX is actually a cover constraint and can be decomposed into two well-formedness constrains, one for onsets and another for codas. The first one, *COMPLEXONS, bans the occurrence of more than one consonant in onset position.

(18) ***COMPLEXONS**: onsets are simple.

Languages in which *COMPLEXONS is undominated have simple onsets only.

If a language allows complex onsets, but of no more than two consonants, the formulation of the constraint *COMPLEXONS is accordingly modified:

(19) ***ONS/CCC**: clusters of more than two consonants are disallowed in onsets.

The constraint *COMPLEXCODA prohibits the occurrence of more than one consonant in the coda. If *COMPLEXCODA is undominated a language has simple codas only.

(20) ***COMPLEXCODA**: codas are simple.

Finally, consider the optimality-theoretic equivalent of the Sonority Sequencing Generalization, or Sonority Sequencing Principle (Selkirk 1982, Clements 1990), which imposes that the sonority profile of a syllable must slope outwards from the nucleus:

(21) **SON-SEQ**: complex onsets rise in sonority and complex codas fall in sonority.

2.1.2.2 Correspondence constraints

Correspondence constraints model the identity between input and output. The particular model of faithfulness adopted here is *correspondence theory* (see e.g. Sherrard 1997, pp. 68–77, and Kager 1999, pp. 248–252).

In correspondence theory violations are assessed by directly examining the relation holding between input and output. The elements of two phonological representations are seen as being related by a mapping from one to the other. Correspondence is defined as follows:

(22) *Correspondence*: In two strings S_1 and S_2, related to one another as input-output, *correspondence* is a relation $\mathcal{R}$ from the elements of S_1 to those of S_2. Elements $\alpha \in S_1$ and $\beta \in S_2$ are referred to as *correspondents* of one another when $\alpha \mathcal{R} \beta$.

GEN supplies pairs of strings S_1 and S_2 as well as the correspondence relationships between the elements of these strings. Correspondence is a relationship evaluated by constraints. Constraints evaluating correspondence relations are violable. Optimal forms display various imperfect correspondence relationships, such as deletion, epenthesis, featural change, etc.

For all correspondence constraint families a distinction is made between the *domain of* $\mathcal{R}$ and *range of* $\mathcal{R}$. Here are their formal definitions:

(23) Domain ($\mathcal{R}$): if $\mathcal{R} \subset A \times B$, $x \in$ Domain ($\mathcal{R}$) iff $x \in A$ and $\exists\ y \in B$ such that $x\ \mathcal{R}\ y$

(24) Range ($\mathcal{R}$): $y \in$ Range ($\mathcal{R}$) iff $y \in B$ and $\exists\ x \in A$ such that $x\ \mathcal{R}\ y$.

In the definitions above, $S_1$and S_2 are encoded as sets of elements. The relation $\mathcal{R}$ on elements of strings (S_1, S_2) is defined as a subset of $S_1 \times S_2$.

The families of constraints of interest here are MAXIMALITY, DEPENDENCE and IDENTITY [F]. The members considered are MAX-IO, DEP-IO and IDENT [F] respectively.

The first constraint family, MAXIMALITY, has as one of its members the constraint MAX-IO, which prohibits deletion. The overall effect of MAX-IO is thus similar to that of PARSE in McCarthy and Prince (1993a).

(25) **MAXIMALITY**
Every element of S_1 has a correspondent in S_2.
Domain ($\mathcal{R}$) = S_1
Range ($\mathcal{R}$) = S_1
Members: S_1 S_2
MAX-IO Input Output
Effect: no deletion of segments

The relevant member of the second family of constraints is DEP-IO, which militates against epenthesis. The overall effect of DEP-IO is similar to that of FILL in McCarthy and Prince (1993a).

(26) **DEPENDENCE-IO**
Every element in S_2 has a correspondent in S_1.
Domain ($\mathcal{R}$) = S_1
Range ($\mathcal{R}$) = S_2
Members: S_1 S_2
DEP-IO Input Output
Effect: no epenthesis of segments

Finally, in the third family of constraints, the member to be considered is the constraint IDENT [F], which imposes featural identity between correspondents.

(27) **IDENTITY [F]**
Correspondent segments have identical values for feature [F].
Domain ($\mathcal{R}$) = S_1
Range ($\mathcal{R}$) = S_2
Members: S_1 S_2
IDENT-IO [F] Input Output
Effect: no featural changes

In addition to these families of constraints, two other constraints have to be mentioned: CONTIGUITY, LINEARITY and ANCHORING. The relevant members are CONTIG-IO, LINEAR-IO and ANCHOR-IO respectively.

CONTIGUITY bans both medial epenthesis and medial deletion.

(28) **CONTIGUITY**
The portion of S_1 standing in correspondence forms a contiguous string, as does the correspondent portion of S_2.
Domain ($\mathcal{R}$) = a single contiguous string in S_1
Range ($\mathcal{R}$) = a single contiguous string in S_2
Members: S_1 S_2
CONTIG-IO Input Output
Effect: no medial epenthesis or medial deletion of segments

The constraint LINEARITY prohibits metathesis.

(29) **LINEARITY**

S_1 is consistent with the precedence structure of S_2 and vice versa.
Let $\alpha, \beta \in S_1$ and $\alpha', \beta' \in S_2$.
If $\alpha \mathcal{R} \alpha'$ and $\beta \mathcal{R} \beta'$, then $\alpha < \beta$ iff $\sim (\beta' < \alpha')$

Members:	S_1	S_2
LINEAR-IO	Input	Output

The constraint ANCHORING imposes edge-in mapping. ANCHORING is decomposed, into RIGHT-ANCHOR and LEFT-ANCHOR (Sherrard 1997, p. 69, Kager 1999, p. 251). RIGHT-ANCHOR militates against deletion or epenthesis at the right edge while LEFT-ANCHOR bans deletion or epenthesis at the left edge. In line with current optimality-theoretic literature (see e.g. Kager 1999, p. 137), ANCHORING subsumes the Generalized alignment constraints in McCarthy and Prince (1993b).

(30) **ANCHORING**

Any element at the designated periphery of S_1 has a correspondent at the designated periphery of S_2.
Let Edge (X, {L, R}) = the element standing at the Edge = L, R of X.

(31) **RIGHT-ANCHOR**

If α = Edge (S_1, R) and β = Edge (S_2, R), then $\alpha \mathcal{R} \beta$.

LEFT-ANCHOR

If α = Edge (S_1, L) and β = Edge (S_2, L) then $\alpha \mathcal{R} \beta$.

Members:	S_1	S_2
ANCHOR-IO	Input	Output

Effect: no epenthesis or deletion at edges

2.2 Advantages of optimality theory

Archangeli (1997, p. 27) and Roca (1997, p. 5) summarize as follows some of the advantages offered by optimality theory, as compared to rule-based approaches. It defines a clear and limited role for constraints, since each constraint in CON is universal and constraints are ranked in EVAL. Different constraint hierarchies express language variability. The rule component is entirely eliminated, and optimality theory is therefore a uniform approach, whereas rule-based models are not, as they also appeal to constraints. Optimality theory deals with the "non-universality of universals" problem by assuming that universals do not play the same role in every language. Finally, it accounts for the learnability of the system. Thus, since GEN is a component of Universal Grammar and CON is a module of Universal Grammar, learnability is limited to constraint ranking and internalizing a lexicon (i.e. establishing lexical representations).

2.3 Optimality theory and the acquisition of first language phonology

There is already a considerable body of literature, within an optimality-theoretic framework, on the acquisition of first language phonology.

Essentially, there are a number of contradictory views on the optimality theoretic treatment of the acquisition of first language phonology. The divergences mainly focus on two issues: the initial ranking of constraints and the mechanism of acquisition. Thus, for Gnanadesikan (1995 and 1996), Smolensky (1996), Grijzenhout (2000), Grijzenhout and Joppen (2000), in the initial ranking markedness constraints outrank faithfulness constraints, and acquisition consists in the promotion of faithfulness over markedness. For others (Hale and Reiss 1997a, 1997b, and 1998), however, faithfulness constraints are initially ranked higher than constraints against marked structure. Finally, for Tesar and Smolensky (1998 and 2000), Kager (1999), Grijzenhout (2000) and Grijzenhout and Joppen (2000) acquisition consists in the demotion of constraints.

Whatever the differences among the various theoretical stances, all converge on assuming reranking of constraints in the process of the acquisition of first language phonology. Consider thus the English examples below, adapted from Grijzenhout (2000):

(32) Adult form [bæg] 'bag'
Child form [bæk]
Adult form [bæk] 'back'
Child form *[bæg]

English children initially produce voiceless obstruents instead of their voiced counterparts in coda position. This can be handled by assuming the markedness constraint NoVoicedCoda that imposes voiceless coda obstruents. Evidence from children's errors points to the initial ranking

(33) NoVoicedCoda >> Ident[Voice]

The evaluation of this constraint hierarchy is shown in the tableau below:

(34)

/bæg/	NoVoicedCoda	Ident[Voice]
bæg	*!	
☞ bæk		*

On the basis of adult forms, at some stage, English children rerank the markedness constraint NoVoicedCoda to a position below the faithfulness constraint Ident[Voice]. This reranking of the markedness constraint at issue leads to the constraint hierarchy in adult English:

(35) Ident[Voice] >> NoVoicedCoda

The evaluation is shown in the following table:

(36)

/bæg/	IDENT[VOICE]	NOVOICEDCODA
☞ bæg/		*
bæk	*!	

To conclude, the acquisition of first language phonology can be defined, neutrally, as consisting essentially in the reranking of constraints to match the constraint hierarchy holding for the adult language.

2.4 Optimality theory and the acquisition of second language phonology

As shown by Hancin-Bhatt (2000, p. 202) "O[ptimality] T[heory] has received little attention in the field of L2 acquisition". Very few studies have been published to date. The brief presentation that follows is based on Hancin-Bhatt and Bhatt (1997), Hancin-Bhatt (2000) and Grijzenhout (2000).

In optimality theory, the acquisition of second language phonology is effectively reduced to unlearning the rankings that hold for the phonology of the first language and to learning the constraint hierarchy of the target language. In the early stages of the acquisition of second language phonology the rankings are characterized by instability and the emerging phonology is therefore dynamic. Time and exposure to target language input are conducive to a stabilization of constraint rankings.

An optimality-theoretic phonology allows various output forms to be generated. Although only one such candidate emerges as the optimal one, other forms are potentially optimal provided minor re-rankings of the relevant constraints take place. Consequently, variant outputs forms are expected to occur, since the interlanguage has access to two or more constraint hierarchies. The interlanguage has access to the following rankings: the constraint hierarchy of the native language, which accounts for production errors that can be attributed to transfer; the hypothesized target language ranking, which accounts for accurate outputs; rerankings between the constraint hierarchies of the first and of the target language, which account for production errors that cannot be attributed to transfer.

To illustrate the way optimality theory handles the acquisition of second language phonology I present hereinafter examples, adapted from Broselow, Chen and Wang (1998), of errors of Mandarin Chinese learners of English. While English exhibits syllable-final obstruents, Mandarin Chinese disallows such consonants in the coda. In the latter, NOOBSCODA, the constraint against obstruent in codas, is thus undominated.

Mandarin Chinese learners of English resort to three strategies to avoid illegal syllable structures. Only two of these strategies[3] will be illustrated here: paragoge and deletion of the obstruent. Both are attested in the acquisition of second language phonology[4]. These strategies represent violations of Dep-IO or Max-IO respectively.

The relevant constraint hierarchy holding for English is:

(37) Max-IO, Dep-IO >> NoObsCoda

On the other hand, the initial ranking in Mandarin Chinese is:

(38) NoObsCoda >> Max-IO, Dep-IO

Mandarin Chinese learners of English who resort to vowel paragoge rank Max-IO higher than Dep-IO. The constraint hierarchy is:

(39) NoObsCoda, Max-IO >> Dep-IO

For those who delete the obstruent, Dep-IO >> Max-IO. The constraint hierarchy is:

(40) NoObsCoda, Dep-IO >> Max-IO

The evaluations are set out in the tableaux below:

(41)

/big/	NoObsCoda	Max-IO	Dep-IO
big	*!		
bi		*!	
☞ bigə			*

(42)

/big/	NoObsCoda	Dep-IO	Max-IO
big	*!		
☞ bi			*
bigə		*!	

Mandarin Chinese learners, then, must demote the structural constraint NoObsCoda from its high ranking in their native language to a position below the faithfulness constraints Max-IO and Dep-IO.

2.5 Optimality theory and variation in phonology

Variation, as shown below, poses a number of theoretical problems for optimality theory. Not surprisingly, the treatment of variation has been a matter of some debate in the literature (Reynolds and Sheffer 1994, Zubritskaya 1995, Nagy and Reynolds 1997, Kager 1999, pp. 404–407, and, for a strong criticism of the optimality-thoretic approaches to variation, McMahon 2000, pp. 105–115). The major point of contention is the

[3] The third one is devoicing voiced obstruents. For details see Broselow, Chen and Wang (1998, pp. 274–278). See also Grijzenhout (2000).

[4] See also Grijzenhout (2000).

feasibility of reconciling variability with the essentially *deterministic* nature of optimality-theoretic phonology.

The discussion below is based on van Oostendorp (1997) and Kager (1999) and it focuses on the issues of free variation, speech styles and co-phonologies.

2.5.1. Free variation

In optimality-theoretic terms, free variation can be defined as the case of an input mapped onto two outputs, both being grammatical:

(43) Input → Grammar → Output 1
Input → Grammar → Output 2

The occurrence of free variants is thus not determined by the grammar of the language. On the other hand, since an optimality-theoretic phonology is an input–output mapping device, it follows it is deterministic. Accordingly, given an input, only one single candidate should always emerge as the optimal output. Since the distribution of free variants, however, is not determined by the phonology, it runs counter to the deterministic nature of an optimality-theoretic phonology.

Kager (1999, pp. 405–407) discusses a number of solutions of the theoretical problem raised by the phenomenon of free variation. One such potential solution would reside in redefining the notion of optimal output as a set of forms {Output 1, Output 2... Output *n*}. This would be the optimality-theoretic equivalent of specific optional rules in derivational, rule-based theory. However, unlike optional rules, which may or may not be applied, constraints are in principle provided by universal grammar and are consequently not language-specific but potentially active in the phonology of every language. Since the selection of output forms is imposed by the constraint hierarchy, free variation too must be accounted for in terms of ranking of constraints.

Kager (1999, p. 406) suggests that the principle of a single constraint hierarchy can be salvaged, even if at a cost: assuming that conflicting constraints are not always strictly ranked and that, moreover, they may be crucially unranked. It is precisely *free ranking* that can be considered the optimality-theoretic counterpart of the application of optional rules in derivational phonology. If two constraints *1* and *2* are freely ranked, the evaluation of the candidate set is split into two subhierarchies of constraints, which differ with respect to the relative ranking of these constraints.

(44) **Free ranking** of constraints *1* and *2*
Evaluation of the candidate set is split into two subhierarchies. Each subhierarchy selects an optimal output. In one subhierarchy the ranking is constraint *1* >> constraint *2*, whereas in the other it is constraint *2* >>constraint *1*.

Consider the following simplified example of free ranking (Kager 1999, p. 406) for English vowel reduction, illustrating how the conflict between the constraints REDUCE (vowel quality) and IDENT-IO in favour of either the former or the latter

(45)

	IDENT-IO	REDUCE
☞ sentim[en]tality		*
sentim[n]tality	*!	

(46)

	REDUCE	IDENT-IO
sentim[en]tality	*!	
☞ sentim[n]tality		*

A few comments are in order here. First, free ranking has the advantage of preserving the principle of strict domination within each subhierarchy. Second, in free variation outputs differ only in a minor respect. It is only two constraints in the constraint hierarchy that are subject to free ranking, while the rest of the hierarchy is identical. Third, free ranking captures the intrinsic relatedness of variable outputs. Subhierarchies differ only with respect to those constraints the ranking of which is not determined by the phonology. A phonology that includes free rankings is *undetermined*.

2.5.2. Speech style

As is well known, the distribution of variable outputs is also influenced by sociolinguistic variables and performance variables. Accordingly, in all languages different *speech styles* (*registers* or *style levels*) can be identified. Van Oostendorp (1997) suggests that speech styles can be analysed within an optimality-theoretic framework.

Each speech style is defined by a particular constraint hierarchy. One important challenge for optimality theory, however, is restricting the ways in which speech styles within one language can differ from each other (van Oostendorp 1997, p. 206). The amount of difference is constrained by the faithfulness constraints, which are instrumental in defining speech styles too. The difference between any two speech styles in a given language can be accounted for (see van Oostendorp 1997, p. 209) as follows:

(47) The more formal the speech style, the higher ranked the faithfulness constraints.

The notion of constraint ranking and the role of faithfulness constraints make it possible to formally predict, for any two speech styles, which is the more formal one. Consider the analysis of Turkish vowel epenthesis (van Oostendorp 1997, pp. 222–225). Informal Turkish disallows complex onsets. In loanwords, onset consonant clusters are therefore epenthesized. Three speech styles can be distinguished in Turkish. In the most informal speech style the epenthetic vowel harmonizes in roundness and backness with the following vowel, whereas in the less informal one the epenthetic vowel is the default high central vowel [ɨ]. Here are, e.g., the variants of the loanword ‘prince’, from French [pres], in the three speech styles:

(48)

	careful style	less careful style	colloquial style
‘prince’	[prens]	[pɨrens]	[pirens]

The interplay of four constraints is at work here: *COMPLEXONS, DEP-IO, NOSPREADING and SPREAD F. The constraint NOSPREADING prohibits an autosegmental association between a feature and a segment in the output form not present in the input. The constraint SPREAD F requires that if a feature F is linked to one segment in the output it should be linked to all segments in that output. The relevant instances are SPREAD [back] and SPREAD [round]. The constraint hierarchies for the three speech styles are:

(49) careful style: DEP-IO >> *COMPLEXONS, NOSPREADING >> SPREAD

(50) less careful style: *COMPLEXONS >> DEP-IO, NOSPREADING >> SPREAD

(51) colloquial style: *COMPLEXONS >> SPREAD, DEP-IO >> NOSPREADING

The evaluation for each speech style is shown in tableaux (52), (53) and (54) respectively:

(52)

	DEP-IO	*COMPLEXONS	NOSPREADING	SPREAD
☞ prens		*		
pɨrens	*!			*
pirens	*!		*!	

(53)

	*COMPLEXONS	DEP-IO	NOSPREADING	SPREAD
prens	*!			
☞ pɨrens		*		*
pirens		*	*!	

(54)

	*COMPLEXONS	NOSPREAD	DEP-IO	NOSPREADING
prens	*!			
pɨrens		* !	*	
☞ pirens			*	*

As can be seen, in the so-called careful style the faithfulness constraint DEP-IO outranks all the other constraints, as predicted.

2.5.3. Co-phonologies

Many languages have been claimed to include *coexistent phonemic systems*[5] or *co-phonologies*[6]. This would account for lexical variation resulting from strata such as not fully integrated/adapted loanwords and/or mimetics and other lexical exceptions.

In optimality-theoretic terms, in such languages the phonology is split into multiple constraint hierarchies, which select their own optimal output form on the basis of their own particular ranking of constraints. Within such an approach, a given input is fed into two parallel co-phonologies which yield two output forms:

(55) Input → Co-phonology 1 → Output 1
Input → Co-phonology 1 → Output 2

Unlike in the case of free variation, splitting the phonology into co-phonologies predicts that each co-phonology is independent and that, consequently, they may differ radically and in many respects.

Consider the following example from Japanese (based on Itô and Mester 1995a and 1995b). In the phonology of native Japanese words and of assimilated foreign loans, the structural sequential constraint *TI excludes nonpalatal coronal consonants followed by the high front vowel [i] (e.g. **ti*, **di*, **si*, **zi*):

(56) *TI: *[CORONAL] [Vplace, –back]
| |
[+anterior] [+high]

The following constraint hierarchy holds for native Japanese words and for assimilated loanwords such as [tʃi:mɯ] 'team':

(57) *TI >> IDENT-IO[CORONAL, +ant].

Consider the evaluation in the tableau below:

(58)

/ti:m/	*TI	IDENT-IO[COR+ant]
☞ tʃi:mɯ		*
t:mɯ	*!	

On the other hand, for non-integrated loanwords, such as [ti:N][7] 'teenager', the ranking is reversed:

(59) IDENT-IO[CORONAL, +ant] >> *TI

This is confirmed by the evaluation below:

[5] See Fries and Pike (1949).
[6] See, for instance, Itô and Mester (1995a and 1995b), Inkelas, Orgun and Zoll (1997), and Féry (1999).
[7] [N] = uvular nasal.

(60)

/ti:n/	IDENT-IO[COR+ant]	*TI
ʧi:N		*
☞ ti:N	*!	

2.6 Optimality theory and sound change

The standard view in optimality theory is that sound change can be analysed as constraint reranking (see e.g. Jacobs 1995, p. 219, McMahon 2000, p. 63).

A number of important theoretical issues in connection with this view of sound change have been debated in the literature. Thus, Zubritskaya (1995) discusses problems raised by the treatment of markedness. In his turn, Haspelmath (1999) argues for supplementing optimality with constraints on language use. In his view, this captures the generalization that phonological constraints normally correspond to constraints of the latter type. Finally, McMahon (2000, pp. 57–104) goes as far as to question the explanatory value of the mechanism of constraint reranking, in at least a number of cases.

To illustrate the diachronic mechanism of sound change in the optimality-theoretic framework, I have chosen an example from the development of Vulgar Latin into Spanish. As is well known, words inherited from Latin with an onset cluster of the type /s/ + voiceless stop exhibit in Spanish a prothetic vowel /e/. If one assumes a constraint *ONS/sO, prohibiting onset clusters made up of /s/ and an obstruent, the relevant hierarchy in Vulgar Latin is:

(61) DEP-IO >> *ONS/sO

In Spanish the ranking is reversed to:

(62) *ONS/sO >> DEP-IO

Consider the example of Vulgar Latin *schola* /sko:la/ and of Spanish *escuela* /ɛskuela/ in (63) and (64) respectively. Note that this is a simplified example, in which I ignore other constraints, such as those relevant to the diphthongisation of Vulgar Latin /o/ into Spanish /ue/ and for the site of the anaptyctic vowel respectively.

(63)

/sko:la/	DEP-IO	*ONS/sO
ɛsko:la	*!	
☞ sko:la		*

(64)

/sko:la/	*ONS/sO	DEP-IO
skuela	*!	
☞ ɛskuela		*

2.7 Optimality theory and the phonology of pidgin and creole languages

I have shown that optimality theory has been applied to the analysis of, among others, the acquisition of first and second language phonology, of phonological variation and of sound change.

Since all these fields are relevant to research on pidgins and creoles, it would seem that optimality is eminently suitable for the study of the phonology of these languages. In fact, in pidgin and creole linguistics rather little has been written or published to date in this theoretical framework. In view of the promising results obtained so far in domains of interest for pidgin and creole studies, the optimality-theoretic approach to phonology is certainly worth applying in some detail to the phonology of pidgin and creole languages.

2.8 Methodology

2.8.1 The varieties considered

The varieties considered cover both the Atlantic and the Pacific groups. They may differ from one chapter to another. The inclusion of a particular variety in the analysis in next chapters has also been determined by the amount of relevant empirical data available in the corpus at my disposal. This is especially true of the early stages of the English pidgins and creoles. The varieties analyzed in chapters **3**, **4** and **5** are specified in the introduction to each chapter.

2.8.2 The sources

The illustrations are from a wide variety of sources. As both the quantity and the quality of the sources, especially in the case of earlier stages (Hancock 1977, Rickford 1986 and 1991, Baker and Winer 1999, Avram 2000c), varies greatly, this accounts for the noticeable discrepancies in the exemplifications.

For earlier stages of English pidgins and creoles the sources include dictionaries, grammars, texts, sample sentences, word-lists, diaries, travel notes, letters. In addition, for several varieties, e.g. early Saint Kittitian, early Jamaican, early Sranan and early Saramaccan, I have used the various editions of texts. For early Bislama I have also used a list of pre-World War I written attestations.

As for the modern varieties, the sources consist mostly of dictionaries, grammars, textbooks and phrasebooks. For several varieties, e.g. Ghanaian Pidgin English, Broad Cameroon Pidgin English, Assimilated Pidgin English, the Pidgin Proper variety of Nigerian Pidgin English, Jamaican and Tok Pisin examples are also taken from transcripts of recordings.

2.8.3 The examples

Only a few crucial illustrations are listed in the body of chapters **3**, **4** and **5**. For reasons of space, the majority of the some 2,500 forms considered are found in the **Appendices**. These additional examples also show whether a particular phenomenon is fully attested or rather marginal, in the sense of Baker and Huber (2001, p. 164), in the English pidgins and creoles at issue.

In principle, pidgin or creole reflexes of the various onset clusters or of complex and simple codas are exemplified with one form each. In a few exceptional cases, for reasons that are always either spelled out or clear from the context, several examples are listed. Doubtful forms, in the sense of Baker and Huber (2001, p. 164), have not been included. Also excluded are forms with uncertain etymology.

The structure of all entries is as follows: the pidgin or creole form, the etymon (or etyma), the translation (of the basic meaning), and the source. In examples from earlier stages of English pidgins or creoles the date is also mentioned. As a rule, the first attestation is listed in such cases. Dates between hyphens mean "in or around". A hyphen after the date means "in or before".

All examples are listed in the orthography or the transcription system used in the sources mentioned. Thus, examples from earlier stages of the various varieties analyzed are rendered in the original transcription, which follows, more or less consistently, British English orthographic conventions. Note that forms in the 18th and 19th century varieties of the creoles of Surinam sometimes follow Dutch or German orthographic conventions, while late 19th century forms in Bislama are listed in the original French-based system of transcription. Phonemic transcription is used in examples from Yoruba Nigerian Pidgin English and, occasionally, from modern Jamaican. A number of examples from modern Jamaican are rendered in phonetic transcription. Finally, the official orthography is used in the case of the following modern varieties: Sranan, Saramaccan, Ndyuka, Tok Pisin, and Bislama.

3

THE TREATMENT OF /S/-INITIAL ONSET CLUSTERS

3.1 Introduction

This chapter discusses the realization in onset position of three- and two-consonant clusters beginning with /s/ in English pidgins and creoles, both in their earlier stages and in the modern varieties. The analysis deals with both three- and two-consonant clusters, for a number of reasons. First, as is well known, these clusters figure prominently among the examples of cluster simplification or reduction discussed in the literature on the phonology of pidgin and creole languages (Tinelli 1981, pp. 168–169, Holm 1988, pp. 109–110, Holm 2000, pp. 141–142). Second, the treatment of a subset of these onset clusters, those made up of /s/ followed by a voiceless stop, is said to differentiate English-based from French-based pidgins and creoles (Tinelli 1981, p. 168, Holm 1988, p. 109, Holm 2000, p. 142, and Parkvall 1999, pp. 32–33). Third, the same /s/-initial tri- and biconsonantal clusters are conflated into a single diagnostic feature in comparative studies of Atlantic English pidgins and creoles by some authors (Baker 1999, p. 318, and Huber 1999b, p. 78). Finally, two-consonant /s/-initial onset clusters are treated more often like the three-consonant /s/-initial ones rather than like other two-consonant clusters.

A few remarks are in order here. All clusters subject to reduction have two common characteristics: /s/ is followed by a [-sonorant] consonant, and they thus violate SON-SEQ. The exceptional nature of such clusters has long been acknowledged in the phonological literature. Clusters in which /s/ is followed by a [+sonorant] consonant do not violate the constraint SON-SEQ. However, as will be shown, some of these clusters do undergo simplification. I assume the following numerical sonority values: stops 1, fricatives / affricates 2, nasals 3, liquids 4, glides 5, and vowels 6. I further assume (see Hancin-Bhatt and Bhatt 1997) the constraint ONSSON, informally defined below:

(1) ONSSON: for two or more segments to be associated with the same onset a certain distance in the sonority scale must be maintained. This will vary across languages.

As a matter of principle, the constraints assumed, i.e. *ONS/sN, *ONS/L and *ONS/sw, will be conflated into one constraint ONSSON, whose value is established in each of the varieties studied. Reference to the constraints *ONS/sN (sometimes decomposed into *ONS/sm and *ONS/sn), *ONS/L and *ONS/sw will only be made if, in a particular variety, it is necessary to refer to one, several or each of these constraints to account for a particular strategy for the resolution of illicit clusters. Otherwise, generalizations of whatever kind necessary will be made in terms of the constraint ONSSON.

The early Atlantic English pidgins and creoles considered are: Cameroon Pidgin English (in **3.2.1**), Barbadian (**3.2.2**), Saint Kittitian (**3.2.3**), Trinidadian English Creole (**3.2.4**), Tobagonian (**3.2.5**), Sranan (**3.2.6**), Antiguan (**3.2.7**) and Jamaican (**3.2.8**). The special situation in two creoles, Saramaccan and Ndyuka, is analyzed by using data from the modern varieties as well, in **3.2.9** and **3.2.10** respectively.

In **3.3** I look at the reflexes of etyma with /s/-initial onset clusters in eight modern Atlantic English-based pidgins and creoles. These are, in order, the following ones: Krio (in **3.3.1**), Ghanaian Pidgin English (**3.3.2**), Nigerian Pidgin English (**3.3.3**), Cameroon Pidgin English (**3.3.4**), Sranan (**3.3.5**), Antiguan (**3.3.6**), Jamaican (**3.3.7**), and Gullah (**3.3.8**). Most of these Atlantic varieties of restructured English figure among those discussed, in some detail, in **3.2**. Others, such as Nigerian Pidgin English, Ghanaian Pidgin English and Gullah, are only analyzed in this subchapter.

Early Pacific English pidgins and creoles are considered in section **3.4**. The varieties examined are Melanesian Pidgin English (**3.4.1**), Tok Pisin (**3.4.2**), Bislama (**3.4.3**), Solomon Islands Pidgin (**3.4.4**), and Kriol (**3.4.5**).

The next section looks at the situation in several modern Pacific English pidgins and creoles, as follows: Tok Pisin (**3.5.1**), Bislama (**3.5.2**), Solomon Islands Pidgin (**3.5.3**), Kriol (**3.5.4**), and, in addition, Nauru Pidgin English (**3.5.5**).

The findings of the present chapter are summarized in section **3.6**.

3.2 Early Atlantic English pidgins and creoles

3.2.1 Cameroon Pidgin English

In Cameroon Pidgin English, according to Todd (1984, p. 102), "two periods of lexical borrowing can [...] be seen in items derived from English words beginning with s + 1/2 consonants". Todd (1984, p. 102) writes that in the earlier stages the consonant clusters at issue are reduced by means of the deletion of /s/. In fact, this is a misleading generalization. As shown by examples such as those in (2), /s/ deletion takes place only in clusters in which /s/ is followed by a voiceless stop:

(2) /str/
trenja (E *stranger*) 'visitor, guest' (Todd 1984, p. 102)
/skr/
krash[1] (E *scratch*) 'to scratch; scratch' (Todd 1984, p. 102)
/skw/
kwis (E *squeeze*) 'to squeeze' (Todd 1984, p. 102)
/st/
tanap[2] (E *stand up*) 'to stand' (Todd 1984, p. 102)

Since the reflexes of these three- and two-consonant clusters starting with /s/ in English-derived words exhibit /s/ deletion, I propose to capture this phenomenon by means of a constraint *ONS/sO:

(3) ***ONS/sO**: onsets may not consist of /s/ followed by an obstruent.

The well-formedness constraint *ONS/sO must dominate MAX-IO, since /s/ deletion violates the latter precisely to satisfy the requirements imposed by the former. On the other hand, vowel epenthesis is prohibited as well, so DEP-IO also outranks MAX-IO. Note that DEP-IO only militates against the addition of a vowel, it says nothing about where the vowel is inserted (i.e. *before* or *into* the original cluster). Therefore, DEP-IO is violated by potential outputs such as [si.tei], with an epenthetic vowel, and [is.tei][3], with a prothetic vowel. Finally, preserving the original cluster beginnins with /s/ or adding a vowel are equally suboptimal solutions. It follows that *ONS/sO and DEP-IO are not ranked with respect to one another. The basic subhierarchy of constraints[4] for such instances of /s/ deletion is:

(4) *ONS/sO, DEP-IO >> MAX-IO.

Consider the illustration of this ranking in the tableau below:

(5)

/stei/	*ONS/sO	DEP-IO	MAX-IO
stei	*!		
☞ tei			*
si.tei		*!	
is.tei		*!	

Why is it that /s/ is deleted, as in [tei], and not /t/, in the additional potential output [sei], since in either case *ONS/sO is no longer violated? The choice of /s/ deletion over deletion of the following obstruent can be captured by assuming that the constraint

[1] In Schneider (1966, p. 158) *krás*.
[2] In Schneider (1966, p. 169) also *tanóp*.
[3] By convention, in all hypothetical output forms involving addition of a vowel, the vowel will be [i].
[4] Throughout this chapter I ignore violations of constraints in syllabic constituents other than the onset.

CONTIGUITY[5] is also undominated, outranking MAX-IO. Since neither [sei] nor [si.tei] is the optimal output form, the ranking of CONTIGUITY with respect to *ONS/sO and DEP-IO is irrelevant to the outcome:

(6) *ONS/sO, DEP-IO, CONTIGUITY >> MAX-IO

An evaluation is shown in tableau (7):

(7)

/stei/	*ONS/sO	DEP-IO	CONTIG	MAX-IO
stei	*!			
☞ tei				*
sei			*!	*
si.tei		*!	*	
is.tei		*!		

Finally, deletion of /s/ leads to the violation of an additional constraint, LEFT-ANCHOR. Its violation by the optimal output forms again serves the purpose of avoiding onset clusters consisting of /s/ plus an obstruent. It follows that LEFT-ANCHOR, just like MAX-IO, is dominated by *ONS/sO. The final relevant constraint hierarchy is:

(8) *ONS/sO, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR.

The correctness of this ranking is illustrated in the following tableau:

(9)

/stei/	*ONS/sO	DEP-IO	CONTIG	MAX-IO	L-ANCHOR
stei	*!				
☞ tei				*	*
sei			*!	*	
si.tei		*!			
is.tei		*!			*

Given the lexical meaning of the items listed by Todd, these are indeed likely to have entered the language at an earlier stage. Moreover, this would accord well with the situation in many other Atlantic English pidgins and creoles in their earlier stages. There are some problems with Todd's claims. First, the analysis in Todd (1984, p. 102) seems to spell out what is rather implied in Todd (1979b). Indeed, e.g. *tanap* is said to be an "older borrowing" (Todd 1979b, p. 41), and *tori* (E *story*) 'story' is characterized as "the older, more conservative form". Notice, however, that "conservative" is ambiguous, in the sense that it may also be taken as a synonym of basilectal. This second interpretation is supported by the fact that e.g. *tori* is explicitly opposed to the form *stori*, said to be "the more anglicized" (Todd 1979b, p. 176). On this view, deletion of /s/ might also be synchronically an available option for some speakers to simplify the consonant clusters at

[5] In this thesis I do not decompose this constraint as e.g. in Plag (1999).

issue. The coexistence of both /s/ deletion and vocalic epenthesis as strategies to simplify illicit clusters is attested in related pidgins, such as Nigerian Pidgin English (the variety described by Mafeni 1971, see **3.3.3.2**). Second, consider the following examples:

(10) /sp/
sipia (E *spear*) 'spear' (Todd 1979b, p. 27)
/st/
s^{i}tik (E *stik*) 'tree, stick' (Todd 1984, p. 102)

The preservation of the etymological /s/ would suggest that these are recent additions to the vocabulary of Cameroon Pidgin English. However, given their lexical meaning, these words are most likely to have entered Cameroon Pidgin English at an early stage. If so, since they evince vocalic epenthesis instead of the expected deletion of /s/, they would contradict Todd's claims. Therefore, this does raise the issue of whether epenthesis may have been, on occasion, an alternative strategy in the earlier stages of Cameroon Pidgin English. In all fairness, though, my suggestion is not supported by the circumstantial evidence provided by data from earlier stages of closely related West African pidgins and creoles, Krio (**3.3.1**) and Nigerian Pidgin English (**3.3.3**), in which /s/ deletion is attested exclusively.

In the corpus at my disposal there are no relevant examples likely to illustrate the treatment of the clusters /sm/, /sn/, /sl/, and /sl/. Note that such clusters have two characteristics in common: /s/ is followed by a [+sonorant] consonant, and they do not violate the constraint SON-SEQ.

3.2.2 Barbadian[6]

Having examined the earliest written records of early Barbadian, Rickford and Handler (1994, p. 234) note 'the deletion of *s* in syllable initial clusters'. Again, a more accurate formulation would have been one to the effect that /s/ is deleted if followed by a voiceless stop. The very few relevant examples I have been able to collect from the scarce early attestations, listed below and in **Appendix 1**, appear to confirm this claim:

(11) /str/
1835 *trike* (E *strike*) 'to strike' (Rickford and Handler 1994, p. 242)
/sp/
1835 *'peak* (E *speak*) 'to speak' (Rickford and Handler 1994, p. 242)
/st/
1780 *'top* (E *stop*) 'to stop' (Baker 1999, p. 318)

Again, in onset position three- and two-consonant clusters with /s/ followed by a voiceless stop undergo /s/ deletion. This is accounted for by the constraint hierarchy:

[6] Also called Bajan.

(12) *ONS/sO, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR

Tableau (13) illustrates the interaction of these constraints in the case of e.g. *peak*:

(13)

/spi:k/	*ONS/sO	DEP-IO	CONTIG	MAX-IO	L-ANCHOR
spi:k	*!				
☞ pi:k				*	*
si:k			*!	*	
si.pi:k		*!	*		
is.pi:k		*!			*

In the absence of any relevant examples nothing can be said about the fate of the following clusters /sm/, /sn/, /sl/, and /sw/.

3.2.3 Saint Kittitian

For early Saint Kittitian I have had at my disposal first of all the collection of texts in Baker & al. (eds.). Additional relevant examples have been taken from the early Saint Kittitian texts in Parkvall and Edlund (1998).

I have only found reflexes of two-consonant clusters in onset position in which /s/ is followed by a voiceless stop. They are listed below and in **Appendix 2**:

(14) /sp/
1785 *peeke* (E *speak*) 'to speak' (Baker & al 1999, p. 36)
/st/
1785 *tone* (E *stone*) 'stone' (Baker & al 1999, p. 8)
/sk/
1785 *kin* (E *skin*) 'body' (Baker & al 1999, p. 31)

Such examples are accounted for by positing the constraint hierarchy in (15):

(15) *ONS/sO, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR

Consider one such evaluation, for the form *kin* [kin][7] in the following tableau:

(16)

/skin/	*ONS/sO	DEP-IO	CONTIG	MAX-IO	L-ANCHOR
skin	*!				
☞ kin				*	*
sin			*!	*	
si.kin		*!	*		
is.kin		*!			*

The treatment in onset position of the clusters made up of /s/ and a nasal stop is not illustrated in the corpus. On the other hand, it appears that the cluster /sl/ is preserved as such:

(17) /sl/
1785 *sleep* (E *sleep*) 'to sleep' (Baker & al 1999, p. 14)

[7] For the interpretation of the phonetic value of vowels in early written records of Saint Kittitian see Shrimpton (1999) and Smith (1999a).

The cluster /sw/ is also preserved (see also **Appendix 2**):

(18) /sw/
1785 *sweep* (E *sweep*) 'to sweep' (Baker & al 1999, p. 20)

The value of ONSSON in early Saint Kittitian Creole is, then, n ≥2.

3.2.4 Trinidadian English Creole

The analysis below is based on a corpus of texts from Winer (1984, 1993 and 1997), and Winer and Rimmer (1994).

The treatment of three- and two-consonant onset clusters made up of /s/ followed by a voiceless stop is illustrated by a fairly large number of examples (see also **Appendix 3**):

(19) /skr/
1847 *crach* (E *scratch*) 'to scratch' (Winer 1997, p. 76)
/sp/
1825/1826 *peak* (E *speak*) 'to speak' (Winer 1984, p. 194)
/st/
1827 *tan* (E *stand*) 'to stand' (Winer 1993, p. 78)
/sk/
1827 *kin* (E *skin*) 'skin' (Winer 1993, p. 78)

The reflexes of these clusters in early Trinidadian English Creole can be readily accounted for. Consider the ranking in (20) and the evaluation in (21):

(20) *ONS/sO, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR

(21)

/sku:l/	*ONS/sO	DEP-IO	CONTIG	MAX-IO	L-ANCHOR
sku:l	*!				
☞ ku:l				*	*
su:l			*!	*	
si.ku:l		*!	*		
is.ku:l		*!			*

Clusters with /s/ followed by a nasal stop appear to have been preserved as such:

(22) /sm/
1845 *smoke* (E *smoke*) 'to smoke' (Winer 1984, p. 206)

Similarly, /sl/ does not undergo any reduction in onset position:

(23) /sl/
1827 *sly* (E *sly*) 'sly' (Winer 1993, p. 79)

Finally, consider the reflex of /sw/ in the onset:

(24) /sw/
1827 *swear* (E *swear*) 'to swear' (Winer 1993, p. 79)

In early Trinidadian English Creole, then, onset clusters made up of /s/ and a [+sonorant] consonant, which thus obey SON-SEQ, do not undergo simplification. Accordingly, for /s/-initial clusters the value of ONSSON is n ≥1.

3.2.5 Tobagonian

Tobagonian is a variety closely related to Trinidadian English Creole. It is sometimes treated together with Trinidadian English Creole, e.g. in Holm (1989, pp. 459–461) or in Winer (1989 and 1993), as the English creole of Trinidad and Tobago. Winer (1989, p. 17), for example, even coins the term “Trinbagonian”. In this thesis, Tobagonian is considered a separate variety, as e.g. in Hancock (1987) or in Winer and Gilbert (1987).

Taking into account the scarcity of early records of Tobagonian, the treatment of three- and two-consonant onset clusters with /s/ followed by a voiceless stop can be said to be sufficiently well attested (see also **Appendix 4**):

(25) /str/
1883 *trang* (E *strong*) ‘strong’ (Winer and Gilbert 1987, p. 258)
/sp/
1883 *pweyl* (E *spoil*) ‘to spoil’ (Winer and Gilbert 1987, p. 258)
/st/
1883 *tampi* (E *stamp*) ‘penny’ (Winer and Gilbert 1987, p. 255)
/sk/
1883 *kin* (E *skin*) ‘skin’ (Winer and Gilbert 1987, p. 254)

Let me note here that the simplification of these clusters is explicitly mentioned by the first known observer of Tobagonian. In a letter addressed to Schuchardt, Uh writes that “the letter *s* is handled unkindly – it is [...] omitted” (Winer and Gilbert 1987, p. 238). The relevant constraint hierarchy is:

(26) *ONS/sO, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR

Consider the folowing evaluation:

(27)

/skin/	*ONS/sO	DEP-IO	CONTIG	MAX-IO	L-ANCHOR
skin	*!				
☞ kin				*	*
sin			*!	*	
si.kin		*!	*		
is.kin		*!			*

Clusters with /s/ followed by a nasal stop are preserved:

(28) /sn/
1883 *snake* (E *snake*) ‘snake’ (Winer and Gilbert 1987, p. 256)

While no forms illustrate the treatment of /sl/, I have found reflexes of /sw/:

(29) /sw/

1883 *sweet* (E *sweet*) 'sweet' (Winer and Gilbert 1987, 256)

In conclusion, since clusters with /s/ followed by a nasal stop, i.e. with a sonority distance of 1, are preserved I conclude that clusters beginning with /s/ and obeying SON-SEQ are permitted and that the value associated with ONSSON is n ≥1.

3.2.6 Sranan

As is well known, Sranan is an English-based creole with written records from its earliest stages. Some of these earliest attestations have been reprinted, with comments. The analysis that follows is based essentially on data from Focke (1855), Wullschlaegel (1856), Echteld (1961), Voorhoeve and Lichtveld (1975), Lichtveld and Voorhoeve (1980), Smith (1987), Arends and Perl (1995), Bruyn (1995), and van den Berg (2003).

The examples in (30) and in **Appendix 5**, covering more than a century, illustrate the treatment of three-consonant onset clusters beginning with /s/:

(30) /str/

1765 *trange* (E *strong*) 'strong' (Arends and Perl 1995, p. 127)

/skr/

1765 *cras-* (E *scratch*) 'to scratch' (Smith 1987, p. 368)

/skw/

1783 *kwinsi*[8] (E *squeeze*) 'to squeeze' (Smith 1987, p. 236)

The data thus confirm, as noted by e.g. Sebba (1982, p. 26), Smith (1987, p. 230), that in early Sranan the resolution of the clusters at issue involves the strategy of /s/ deletion.

As in Saramaccan (see **3.2.9**) there are two exceptions, in various spellings, all of them from Dutch[9] and therefore later borrowings, preserving the original cluster /skr/:

(31) 1765 *schrifi* (D *schrijven*) 'to write' (Arends and Perl 1995, p. 97)

Consider next the treatment of two-consonant clusters:

(32) /sp/

1765 *piki* (E *speak*) 'to answer' (Arends and Perl 1995, p. 97)

/st/

1718 *tan* (E *stand*) 'to stand' (Smith 1987, p. 216)

/sk/

1765 *schien* (E *skin*) 'body' (Arends and Perl 1995, p. 108)

First, a new constraint has to be added to express the fact that Sranan syllables (almost) never end in a consonant other than a nasal. Following Itô (1986 and 1989), Sherrard (1997), and Alber and Plag (1999) I propose a constraint on codas:

---

8 The "intrusive" nasal may be a trace of an earlier prenasalised fricative */^{n}s/. For a discussion of the status of such [n] + [s] sequences, see Parkvall (2000, pp. 42–43).

9 Dutch etyma for items in the creoles of Surinam are established on the basis of ten Bruggencate (1978).

(33) ***ORALCODA**: only [+nasal] consonants are possible codas.

This constraint is undominated. It secures the elimination of e.g. a potential output form such as [is.pi.ki], since the coda of the first syllable is [-nasal]. The constraint hierarchy is:

(34) *ONS/sO, *ORALCODA, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR

An evaluation is provided below:

(35)

/spi:k/	*ONS/sO	*ORALCODA	DEP-IO	CONTIG	MAX-IO	L-ANCHOR
spi.ki	*!					
☞ pi.ki					*	*
si.ki				*!	*	
si.pi.ki			*!	*		
is.pi.ki		*!	*			*

Second, there are exceptions in my corpus. To these we should add other forms preserving the cluster in the English etymon, such as in (36) and in **Appendix 5**:

(36) *spara* (E *spade*) 'spade' (Echteld 1961, p. 47)

Although these examples are from the modern variety and they do not occur in my limited corpus of early Sranan, they must be assumed to have preserved the original cluster. Their lexical meaning does not suggest they may have entered the language at a later stage. Further, since contacts with English were cut off at an early stage, it is anyway unlikely to assume they are later borrowings. Finally, some of the forms occurring in my corpus of early Sranan or in the modern variety have counterparts which preserve the /s/ in Saramaccan (see **3.2.9**) and Ndyuka (see **3.2.10**). Thus, I can only agree with the conclusion in Smith (1987, p. 231) who writes that, in the case of these clusters, "no rule appears to be statable in order to forecast the nonappearance of /s/". The conclusion that, *if* reduced, the strategy is /s/ deletion is confirmed by an examination of Portuguese- and Dutch-derived forms:

(37) *panja* (P *espalhar*) 'to spread' (Smith 1987, p. 234)
spanjoro (P *espanhol*) 'Spaniard' (Smith 1987, p. 234)
1765 *spikkeri* (D *spijker*) 'nail' (Arends and Perl 1995, p. 111)
1765 *tiberi* (D *stuiver*) 'stiver' (Arends and Perl 1995, p. 103)

Two remarks are in order here. First, I defer the discussion of Portuguese-derived forms until section **3.2.9** on Saramaccan. Second, *tiberi* confirms Smith's (1987, p. 231) claim that "a very few Dutch items seem to show /s/-dropping".

In conclusion, there is no evidence of vowel epenthesis having been used in early Sranan as a strategy to break up illicit onset clusters with /s/ followed by a voiceless stop. Alber and Plag (1999) reach an identical conclusion, noting that vowel epenthesis is not an available option. If so, the effects of epenthesis cannot have been nullified in modern Sranan by syncope, as claimed by Smith (1987, p. 231).

Consider next the treatment of onset clusters with /s/ followed by a nasal stop (see also **Appendix 5**):

(38) /sm/
1718 *smoke* (E *smoke*) 'to smoke' (Arends and Perl 1995, p. 73)
/sn/
1765 *snikki* (E *snake*) 'snake' (Arends and Perl 1995, p. 114)

Both /sm/ and /sn/ occur as such, /sm/ as early as 1718. The only exception, the 1855 form *sineki* with an epenthetic [i], occurs in a record that we owe to a native speaker[10]. However, it is just a variant of the form without the epenthetic [i]. We may then assume later, optional vowel epenthesis, curiously affecting only the cluster /sn/, but not /sm/. As shown in **3.2.7** through **3.2.10**, vowel epenthesis, if occurring, affects both /sm/ and /sn/, although the quality of the epenthetic vowel may differ.

Similarly, the cluster /sl/ is also preserved as such:

(39) /sl/
1718 *sliepe* (E *sleep*) 'to sleep' (Smith 1987, p. 365)

The preservation of the cluster /sl/ is confirmed by its occurrence in words derived from Dutch attested very early:

(40) 1765 *slottelen* (D *sleutel*) 'key' (Arends and Perl 1995, p. 111)

Finally, note the occurrence of metathesis, involving violation of LINEARITY-IO and producing clusters made up of /s/ followed by a liquid. Consider thus the various spellings listed in Smith (1987, p. 355) which indicate, beginning with 1780, [slefi] or [srefi] as reflexes of *self*. Clearly, metathesis could not have taken place had the resulting /sl/ cluster been disallowed in onset position.

As for the cluster /sw/, it is preserved in most cases (see also **Appendix 5**)

(41) /sw/
1765 *zibi* (E *sweep*) 'to sweep' (Arends and Perl 1995, p. 112)
1770 *switi* (E *sweet*) 'sweet' (Arends and Perl 1995, p. 80)

One thing all these forms have in common is the fact that /s/ is never deleted, which means that LEFT-ANCHOR is ranked high and is undominated. I assume the constraint *ONS/sw:

(42) ***ONS/sw**: an onset may not consist of /s/ followed by the glide /w/.

Forms such as *switi*, which preserve the cluster /sw/, are accounted for by the ranking:

---

[10] Norval Smith (personal communication, October 2004).

(43) *OralCoda, L-Anchor, Max-IO, Dep-IO, Contiguity >> *Ons/sw

This hierarchy is illustrated below:

(44)

/swi:t/	*OralCoda	L-Anchor	Max-IO	Dep-IO	Contig	*Ons/sw
☞ swi.ti						*
wi.ti			*!			
si.li			*!		*	
si.wi.ti				*!	*	
is.wi.ti	*!	*		*		

The forms *zibi* or *sibi* exhibit the extremely rare phenomenon of deleting not the leftmost consonant in an /s/-initial illicit onset cluster, but the second consonant[11]. Such forms are also exceptional in that, given that /sl/, /sm/, and /sn/ are all permitted in onset position, we would expect /sw/ to be preserved in all words, since the sonority distance is bigger. Exceptionally, then, the ranking may be:

(45) Ons/sw, *OralCoda, L-Anchor, Dep-IO >> Max-IO, Contiguity

This ranking is confirmed by the evaluation in the following tableau:

(46)

/swi:p	*Ons/sw	*OralCoda	L-Anchor	Dep-IO	Max-IO	Contig
swi.bi	*!					
wi.bi			*!		*	
☞ si.bi					*	*
si.wi.bi				*!		*
is.wi.bi			*!	*		

In conclusion, /s/-initial triconsonantal onset clusters which violate Son-Seq are always simplified by deletion of /s/ whereas their two-consonant counterparts only sometimes. There is no evidence in my corpus of vowel epenthesis having broken up such illicit two-consonant clusters. Basically, all /s/-initial onset clusters obeying Son-Seq are permitted. For such clusters then, the sonority distance defining OnsSon is n ≥1.

3.2.7 Antiguan

The examination of the rather scarce textual attestations of early Antiguan has only yielded examples illustrative of the treatment of three- and two-consonant onset clusters with /s/ followed by a voiceless stop (see also **Appendix 6**):

(47) /spr/

-1832 *'pring* (E *spring*) 'spring' (Jeremiah 1976, p. 207)

/str/

-1832 *'trengthen* (E *strengthen*) 'to strengthen' (Jeremiah 1976, p. 45)

/sp/

-1832 *'peak* (E *speak*) 'to speak' (Jeremiah 1976, p. 203)

[11] Echteld (1961, p. 47) also indicates the variant *swipi*. The latter is not recorded in Anon. (1999).

/st/

-1832 *'tan* (E *stand*) 'to stand' (Jeremiah 1976, p. 205)

These forms illustrate the ranking in (48):

(48) *ONS/sO, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR

This constraint hierarchy is confirmed by the evaluation in the following tableau:

(49)

/stil/	*ONS/sO	DEP-IO	CONTIG	MAX-IO	L-ANCHOR
stil	*!				
☞ til				*	*
sil			*!	*	
si.til		*!	*		
is.til		*!			*

Although not attested in my corpus, I would speculate that one of the clusters made up of /s/ and a [+sonorant] consonant, namely /s/ followed by a nasal stop, was disallowed in early Antiguan. In modern Antiguan (see **3.3.6** for details), /sm/ and /sn/ in onset position are broken up by vowel epenthesis, even though they do not violate SON-SEQ. On the basis of what Rickford (1986, p. 162) calls "feed-back from current usage", one could assume that this would have been the situation in early Antiguan as well. On this analysis, since the fate of /sl/ and /sw/ in early Antiguan is unknown, I tentatively conclude that in /s/-initial clusters the value of ONSSON is at least n ≥2.

3.2.8 Jamaican

Cassidy (1961, p. 37) writes that "at the beginning of words *s* is lost before *p*, *t* or *k*" and goes on to say that "this kind of simplification must have been made from the first" (Cassidy 1967, p. 38). An identical view is expressed by Cassidy and Le Page (1967b, p. lxii) according to whom "[i]nitial /sk/ /skr/ /sp/ /spr/ /st/ /str/ are frequently reduced by loss of /s/" and "this appears to have been the norm in older forms of JC". Surprisingly, Lalla and D'Costa (1990, p. 65) claim that "the regular method [...] was to add intrusive vowels between the consonants of initial clusters". In fact, as the examples below show, this is an unwarranted generalization, as the examples listed below will show.

Early Jamaican is among the best documented English-lexicon contact languages (see e.g. Russell 1868, Cassidy 1961, Lalla 1986, D'Costa and Lalla 1989, D'Costa and Lalla 1990). Consequently, it is not surprising that the treatment /s/-initial onset clusters is quite robustly attested in written records covering a period of more than a century. Consider first the fate of onset clusters in which /s/ is followed by a voiceless stop (see also **Appendix 7**):

(50) /spl/
1830s *'plendid* (E *splendid*) 'splendid' (D'Costa and Lalla 1989, p. 122)
/spr/
1833 *pruce* (E *spruce*) 'spruce' (D'Costa and Lalla 1989, p. 55)
/str/
1831 *'tranger* (E *stranger*) 'stranger' (D'Costa and Lalla 1989, p. 60)
/sp/
1823 *peak* (E *speak*) 'to speak' (D'Costa and Lalla 1989, p. 37)
/st/
1789 *top* (E *stop*) 'to stop' (Baker 1999, p. 318)
/sk/
1788 *corpion* (E *scorpion*) 'scorpion' (D'Costa and Lalla 1989, p. 17)

The relevant constraint hierarchy is:

(51) *ONS/sO, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR

Tableau (52) shows the evaluation for e.g. *stop*:

(52)

/stɔp/	*ONS/sO	DEP-IO	CONTIG	MAX-IO	L-ANCHOR
stop	*!				
☞ top				*	*
sop			*!	*	
si.top		*!	*		
is.top		*!			*

In addition, an indirect indication of the widespread deletion of /s/ in onset position when followed by an obstruent is also provided by instances of hypercorrection, already mentioned in descriptions of early Jamaican. This shows that some speakers of early Jamaican were aware of the simplification or reduction in the onset of theses clusters via /s/ deletion and that they occasionally "restored" an /s/ which does not occur in the etymon:

(53) 1868 *balinster* (E *volunteer*) 'volunteer' (Russell 1868)

Let me now turn to clusters made up of /s/ and a nasal stop. There is evidence from the modern variety too (see **3.3.7**) that Jamaican disallows onset clusters made up of /s/ and a [+nasal] stop, even though they would obey SON-SEQ. This suggests, at first sight, the effect of the following general constraint:

(54) ***ONS/sN**: an onset may not consist of /s/ and a [+nasal] stop

Of the clusters at issue, /sn/ is certainly broken up by epenthesis:

(55) /sn/
19th c. *sinicky* (E *sneaky*) 'sneaky' (Lalla and D'Costa 1990, p. 65)

It is here that Lalla and D'Costa's (1990, p. 65) remark about "intrusive vowels" applies.

Again, evidence from modern Jamaican (**3.3.7**) suggests that the constraint in (54) should be, in fact, decomposed into two constraints. To account for example (55), I assume the undominated constraint *ONS/sn:

(56) ***ONS/sn**: an onset may not consist of /s/ followed by /n/

The quality of the epenthetic vowel seems to have been determined by the nature of the nasal stop. Thus the [CORONAL] nasal stop /n/ selects the [CORONAL] vowel [i][12]. In support of this claim, I can again point to evidence from the modern variety (see **3.3.7**). On this analysis, this is an instance of transcategorial assimilation[13] of the V-to-C type, i.e. of a vowel assimilating to the following consonant. This is captured by the constraint V_{COR}-C_{COR}, which prevents the occurrence of epenthetic [u]:

(57) **V_{COR}-N_{COR}**: insert the [CORONAL] vowel [i] between /s/ and a [CORONAL, +nasal] stop

The relevant constraint hierarchy is:

(58) *ONS/sn, LEFT-ANCHOR, MAX-IO, V_{COR}-N_{COR} >> DEP-IO, CONTIGUITY

In the tableau below I have added the candidate [su.ni:.ki] to show that the violation of V_{COR}-N_{COR} is fatal:

(59)

/sni:ki/	*ONS/sn	L-ANCHOR	MAX-IO	V_{COR}-N_{COR}	DEP-IO	CONTIG
sni:ki	*!					
ni:ki		*!	*			
si:.ki			*!			*
☞ si.ni:.ki					*	*
su.ni:ki				*!		*
is.ni:ki		*!				

Resorting once more to "feed-back from current usage", i.e. taking into account the reflex of /sm/ in the modern variety (see **3.3.7**), I would speculate that this cluster must have been broken up by the epenthesis of [u] (see **3.3.7** for the additional constraints needed).

The cluster /sl/ appears to have been preserved:

(60) /sl/
1823 *sleep* (E *sleep*) 'to sleep' (D'Costa and Lalla 1989, p. 37)

This shows that the constraint *ONS/sL is dominated by all the faithfulness constraints:

(61) DEP-IO, CONTIGUITY, MAX-IO, LEFT-ANCHOR >> *ONS/sL

The ranking is illustrated below:

---

[12] Place features of vowels are taken from Clements (1993) and Clements and Hume (1995), but are considered to be unary features, as in e.g. Pulleyblank (1995), Spencer (1996).
[13] A term first used by Clements (1993, p. 109).

(62)

/sli:p/	DEP-IO	CONTIG	MAX-IO	L-ANCHOR	*ONS/sL
☞ sli:p					*
li:p			*!	*	
si:p		*!	*		
si.li:p	*!	*			
is.li:p	*!			*	

Similarly, /sw/ is preserved:

(63) /sw/
1790 *sweet* (E *sweet*) 'to please' (D'Costa and Lalla 1989, p, 14)

Just like *ONS/sL, the constraint *ONS/sw is also undominated and outranked by the faithfulness constraints:

(64) DEP-IO, CONTIGUITY, MAX-IO, LEFT-ANCHOR >> *ONS/sw

This is confirmed by the evaluation in the following tableau:

(65)

/swi:t/	DEP-IO	CONTIG	MAX-IO	L-ANCHOR	*ONS/sw
☞ swi:t					*
wi:t			*!	*	
si:t		*!	*		
si.wi:t	*!	*			
is.wi:t	*!			*	

Since of all the clusters with a [+sonorant] consonant as C_2 obeying SON-SEQ, /s/ plus a nasal stop is reduced whereas /sl/ and /sw/ are not, I conclude that for /s/-initial clusters the sonority value of ONSSON in early Jamaican is n $\geq$2.

3.2.9 Special case 1: Saramaccan

Saramaccan is an English-based creole whose early history is comparatively well documented, in dictionaries, such as Schumann's 1778 dictionary, exploited in Smith (1987) and Aceto (1996), Riemer's 1779 dictionary, reprinted in Arends and Perl (1995), or letters written by native speakers, printed in Arends and Perl (1995). However, I would like to claim that some changes have affected Saramaccan in the period after, roughly put, Schumann's dictionary (1778), which can only be inferred by an examination of current forms, in e.g. Rountree (1972 and 1992), Rountree and Glock (1982), and Anon. (2003b).

I will start by looking at pre-1778 Saramaccan. Consider thus the reflexes of three-consonant onset clusters beginning with /s/ (see also **Appendix 8**):

(66) /spl/
1778 *plitti* (E *split*) 'to split' (Aceto 1996, p. 32)
/str/
1778 *tranga* (E *strong*) 'strong' (Aceto 1996, p. 32)
/skr/
1778 *krassi* (E *scratch*) 'to scratch' (Smith 1987, p. 368)

/skw/

1778 *kunji* (E *squeeze*) 'to squeeze' (Smith 1987, p. 293)

According to several authors (Alleyne 1980, Sebba 1982, Smith 1987), these clusters, whether from English, as above, or from Portuguese, are simplified by /s/ deletion. There are just three words preserving /s/, all of them from Dutch (see also **Appendix 8**):

(67) /skr/

1778 *skrúfu* (D *schroef*) 'screw' (Aceto 1996, p. 37)[14]

Aceto (1996, p. 27) convincingly argues that the authenticity of these examples cannot be questioned. On the basis of these examples, Aceto (1996, p. 37) concludes that in early Saramaccan "CCCV syllables were occasionally permitted". Assuming the Dutch-derived forms are either later borrowings or exceptions, I posit the following initial constraint hierarchy, which includes the constraint *ORALCODA, as formulated for Sranan in (33):

(68) *ONS/sO, *ORALCODA, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR.

The evaluation of a relevant form is shown below:

(69)

/split/	*ONS/sO	*ORALCODA	DEP-IO	CONTIG	MAX-IO	L-ANCHOR
spli.ti	*!					
☞ pli.ti					*	*
spi.li.ti	*!				*	
si.pli.ti			*!	*		
is.pli.ti		*!	*			*

Consider next the reflexes of two-consonant clusters in English etyma:

(70) /sp/

1778 *pikki* (E *speak*) 'to answer' (Smith 1987, p. 403)

/st/

1778 *stoon* (E *stone*) 'stone' (Smith 1987, p. 242)

/sk/

1778 *skîn* (E *skin*) 'body' (Smith 1987, p. 242)

Except for a limited number of cases, /s/ is deleted in the reflexes of English etyma. Again, all Saramaccan forms exhibit /s/ deletion, captured by the ranking in (68). However, the exceptions deserve being commented upon. First, their authenticity is supported by several pieces of evidence. In two cases, identical forms are attested in early Sranan (see **Appendix 6**): e.g. *skin*, in 1791. As shown by Aceto (1996, p. 27), assuming that there may have been an epenthetic vowel, e.g. [i], will not do, since Schumann seems

[14] Cf. ten Bruggencate (1978, p. 713). Aceto (1996, p. 37) indicates the etymon *schroeven* 'to screw'.

to have been "aware of epenthetic vowels beginning to break up consonant clusters"[15] (Aceto 1996, p. 27). Second, these forms run counter to the claim put forth by Sebba (1982, p. 25). According to Sebba (1982, p. 25), in onset position "clusters of the form / #sC /" in English etyma are reduced in two ways: one is "to drop the /s/" and the second "to insert an epenthetic vowel, usually /i/, after /s/". His examples illustrating the second strategy are from the modern language. Third, relying on modern forms shows that Rickford's principle of "feed-back from current usage" is not always safe. Note, however, a possible early form, recorded by Schumann (1778), *siteh* 'to stay', provided it is indeed etymologically derived from E *stay*[16]. Fourth, one might posit [kin] and [ton], allegedly written *skîn* and *stoon* in an etymologizing spelling. However, given the current Saramaccan forms *sinkini*[17] and *sitonu* respectively (see below), how is it that the original /s/ could have been restored, unless later influence of Sranan or Ndyuka[18] may have played a part? Fifth, the lexical meaning of *stoon* and *skîn* is hardly likely to suggest that they are later additions to the lexicon of Saramaccan. Finally, for Aceto (1996, p. 37), such forms disconfirm even "the most cautious generalization of the creole syllable" in Johnson (1974, p. 119): "the phonological system of the early creole language did not have double obstruent clusters". Aceto's conclusion seems to be supported by the existence of double obstruent onset clusters in reflexes of etyma from Portuguese and Dutch as well[19], of which the former can only date from an early period (see also **Appendix 8**):

(71) 1778 *skada* (P *escada*) 'step; ladder' (Aceto 1996, p. 27)
     1778 *skapu* (D *schaap*) 'sheep' (Aceto 1996, p. 37)

Aceto (1996) concludes that, contrary to a widely held opinion (e.g. Romaine 1988, p. 63, Holm 1988, p. 109), Saramaccan did not start out with the so-called canonical creole CVCV syllable structure. While this would explain the occurrence of the forms with /s/ followed by a voiceless stop, it cannot account for the forms which exhibit /s/ deletion. There are seven forms (from Portuguese or Dutch) preserving the original cluster against nine forms (from English) exhibiting /s/ deletion:

(72) cluster preserved: *skada*, *skapu*, *skîn*, *skóp*, *skopo*, *stoon* and *stoonman*
     /s/ deleted: *pikki*, *poli*, *tan*, *tingi*, *tingimeti*, *tiri*, *tiriman*, *tori* and *tumpi*

---

[15] Cf. the alternates *skada* ~ *sikada* 'ladder' (Aceto 1996, p. 27, footnote 2), from Portuguese *escada* 'ladder' (Smith 1987, p. 234).
[16] Norval Smith (personal communication, October 2004).
[17] With the prenasalized stop [ᵑk]. See Parkvall (2000, pp. 39–42) on prenasalized stops in Surinam.
[18] Later, post-1778 influence of Ndyuka is a possibility envisaged by Aceto (1996, p. 41).
[19] Incidentally, all of them starting with /sk/. Cf. the results for Sranan in Smith (1987, p. 230).

Neither can Aceto's conclusion account for the fact that *skada* is the only Portuguese-derived word preserving a two-consonant onset cluster of the type /s/ plus a voiceless stop[20]. Finally, this hypothesis cannot explain all the other Portuguese-derived items which do reduce this cluster, either by /s/ deletion or via vowel epenthesis (Smith 1987, p. 234).

I believe there are two possible analyses. One is to conclude that the initial resolution of these illicit two-consonant clusters in early Saramaccan normally involves two strategies: either /s/ deletion, as with three-consonant clusters, or vowel epenthesis. The first strategy, applying only to Portuguese- and English-derived words (as with Sebba 1982 and Smith 1987), would be consistent with the fact that these are, in this order, the oldest layers in the Saramaccan lexicon. This strategy is expressed by the constraint hierarchy in (68). The second, competing strategy of vowel epenthesis could be accounted for by positing the ranking:

(73) *ONS/sO, *ORALCODA, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

It appears not to apply to English- and pre-1779 Dutch-derived words. This, however, raises the question why English- and Portuguese-derived items evince an inconsistency. Indeed, the illicit onset clusters at issue are reduced either by /s/ deletion or through vowel epenthesis, unlike the later, Dutch-derived ones, that, if reduced, undergo only vowel epenthesis.

The other analysis, adopted here, follows Smith (1987 and 1999b). The differential treatment of clusters with /s/ in Portuguese-derived items, i.e. either through /s/ deletion or through vowel epenthesis, is shown by Smith (1987, pp. 133–138, and 1999b, pp. 287–289) to parallel closely the situation in several Portuguese-based creoles. The Portuguese-derived forms exhibiting either /s/ deletion or vowel epenthesis are therefore assumed to originate in a West African Portuguese Pidgin and to have been imported as such into early Saramaccan[21]. From this, I draw the conclusion that the two strategies, /s/ deletion and vowel epenthesis, never coexisted in any period in the evolution of Saramaccan. On this analysis, if two-consonant /s/ plus voiceless stop onset clusters are reduced, the only initial strategy in early Saramaccan is /s/ deletion, attested in the adaptation of words of English origin. This would leave just one single Portuguese-derived form, actually a variant, unaccounted for: the variant *skada* of *sikada* (P *escada*),

[20] In the lists in Smith (1987, pp. 233–234) and in Ladhams (1999a, pp. 235–239).

[21] Note, however, that Aceto (1996, p. 234) and Ladhams (1999a and 1999b) reject the hypothesis of a Portuguese Pidgin influence on Saramaccan.

since /s/ plus voiceless stop onset clusters otherwise occur, exceptionally, in English- and Dutch-derived items exclusively. Note, however, that *skada* is anyway an exception, even if Aceto's (1996) line of reasoning is adopted. On the other hand, the alternative approach outlined here would present two advantages. It would explain the fate of English-derived words with two-consonant onset clusters made up of /s/ followed by a voiceless stop undergoing reduction via /s/ deletion. Moreover, since /s/ deletion has been shown to occur with three-consonant clusters as well, this would mean that, when simplified, these clusters and two-consonant ones are treated uniformly. Thus, /s/ is deleted across the board (with the exceptions from English and from Dutch listed above). In other words the ranking in (68) basically accounts for /s/-initial three-consonant onset clusters too. On this analysis, the epenthetic vowel in current forms obtains from a later development[22].

Next, it appears that, initially, double onset clusters with /s/ followed by a nasal stop are preserved (see also **Appendix 8**):

(74) /sm/

1778 *smâla* (E *small*) 'small' (Aceto 1996, p. 32)

/sn/

1778 *sneki* (E *snake*) 'snake' (Smith 1987, p. 410)

This can be straightforwardly accounted for if *ONS/sN is dominated by all the faithfulness constraints:

(75) *ORALCODA, DEP-IO, CONTIGUITY, MAX-IO >> LEFT-ANCHOR, *ONS/sN

A relevant form is evaluated in the tableau below:

(76)

/smɛl/	*ORALCODA	DEP-IO	CONTIG	MAX-IO	L-ANCHOR	*ONS/sN
☞ sme.ri						*
me.ri				*!	*	
se.ri			*!	*		
si.me.ri		*!	*			
is.me.ri	*!	*			*	

In this case too, vowel epenthesis, exhibited in current forms, is a later development.

Direct evidence regarding the fate of the cluster /sl/ consists of only one form:

(77) /sl/

1779 *siló* (E *sloth*) 'sloth' (Arends and Perl 1995, p. 346)

Incidentally, *siló* is one of the forms with which Sebba (1982, p. 25) exemplifies the strategy of vowel epenthesis. However, Sebba's example seems to be taken from modern Saramaccan. Following Sebba (1982) and Aceto (1996), and *contra* Smith (1977

[22] Cf. Aceto (1996, p. 38): "any sibilant/obstruent clusters in pre-1778 Saramaccan are separated via epenthesis in the post-1778 forms".

and 1987) I assume that pre-1778 Saramaccan allowed consonant plus liquid clusters in onset position. These must have included /s/ plus liquid onset clusters. We have first circumstantial evidence in this respect from 1778 and 1779 forms having undergone metathesis, such as:

(78) 1778 *srabbo* (E *sharp*) 'sharp' (Sebba 1982, p. 32)
1779 *srefi* (E *self*) 'self; even' (Arends and Perl 1995, p. 351)

Such forms violate the anti-metathesis constraint Linearity-IO. Metathesis could not have taken place if the resulting cluster /s/ plus a liquid had been disallowed. Second, as put by Smith (1987, p. 366), pre-1778 Saramaccan "has basically a situation of variability between /l/ and /r/" (illustrated by some of the forms listed above). Third, the same variability is also attested in early Sranan (see **3.2.6**), between spellings indicating [slibi] and [sribi]. Fourth, metathesis conducive to /s/ plus liquid onset clusters are attested in early Sranan, with spellings rendering either [slefi] or [srefi]. In light of these data, I conclude that in pre-1778 Saramaccan the constraint *Ons/sL is dominated by the faithfulness constraints. I interpret the 1778 and 1779 form *siló* as showing that epenthetic vowels, a later development, had already started to occur. The diachronic stages assumed are **slo* > *silo*. The original constraint hierarchy must have been:

(79) *OralCoda, Dep-IO, Contiguity, Max-IO, Left-Anchor >> *Ons/sL

Consider next the reflexes of /sw/ in onset position (see also **Appendix 8**):

(80) /sw/
1778 *sum* (E *swim*) 'to swim' (Smith 1987, p. 293)
1778 *sweli* (E *swell*) 'to swell' (Smith 1987, p. 293)
1778 *swütti* (E *sweet*) 'sweet' (Smith 1987, p. 293)

The cluster at issue is basically treated in two different ways. One thing all these forms have in common is the fact that /s/ is never deleted, which means Left-Anchor is ranked high and is undominated. To account for forms such as *sweli*, which preserve the cluster /sw/, I assume the ranking in (81):

(81) *OralCoda, L-Anchor, Max-IO, Dep-IO, Contiguity >> *Ons/sw

The interactions of these constraints is shown in tableau (82):

(82)

/sweər/	*OralCoda	L-Anchor	Max-IO	Dep-IO	Contig	*Ons/sw
☞ swe.li						*
we.li			*!			
se.li			*!		*	
si.we.li				*!	*	
is.we.li	*!	*		*		

The form *sum* illustrates a phenomenon noted by Smith (1987, p. 292), namely that occasionally /w/ "merges with the following vowel, resulting in rounding of the vowel". Smith (1987, p. 292) calls this "partial or complete merger", although I think that fusion or coalescence are more appropriate. In an optimality-theoretic framework fusion has been treated in the literature in terms of violation either of LINEARITY-IO or of UNIFORMITY-IO. The former analysis is exemplified in Kager (1999, p. 63) while the latter is proposed by McCarthy and Prince (1995). It is this last approach that is adopted here. UNIFORMITY-IO can be construed as an anti-coalescence constraint. It can be defined informally as follows:

(83) **UNIFORMITY-IO**: No element of the output has multiple correspondents in the input

It is precisely this requirement that is violated by the form *sum*: the [LABIAL] glide /w/ in the etymon *sweet* fuses with the following [CORONAL] vowel and yields the [LABIAL] vowel [u]. Here is the correspondence diagram for fusion (adapted from Kager 1999, p. 62):

(84) Input w V [CORONAL]
\ /
Output V [LABIAL]

The fact that the strategy of /w/ deletion is left unemployed, as in the candidate [siti] below, points to the conclusion that MAX-IO dominates UNIFORMITY-IO, the crucial ranking accounting for this form. The constraint hierarchy is:

(85) *ONS/sw, *ORALCODA, LEFT-ANCHOR, MAX-IO, CONTIGUITY >> UNIFORMITY-IO

Here is the evaluation of *sum*:

(86)

/swim/	*ONS/sw	*ORALCODA	L-ANCHOR	DEP-IO	MAX-IO	CONTIG	UNIFORM-IO
swim	*!						
☞ sum							*
su.wim				*!		*	
wim			*!		*		
sim					*!	*	
is.wim		*!	*	*			

Note that one might also consider the possibility of multiple association of [LABIAL], since etymological [CORONAL] /i/ is surrounded by the [LABIAL] segments /w/ and /m/. I can offer no explanation for the 1778 and 1779 form *swütti*. I find it rather difficult to accept Smith's (1987, p. 294) speculation that this form suggests "the likelihood of intermediate stages: wi > wü > u", since it would presuppose the (admittedly short-lived) occurrence of the highly marked vowel /y/.

The sonority value assigned to ONSSON in the case of /s/-initial onset clusters for pre-1778 Saramaccan appears to have been n $\geq$1. Note that the quality of the epenthetic vowel, which has not been dealt with, can be safely inferred only from current forms.

I now turn to forms (regardless of their etymology) in modern Saramaccan and try to see what they can tell us about developments that, I claim, following Aceto (1996), take place, essentially, sometime after 1778. Consider thus three-consonant clusters with /s/ followed by a voiceless stop (see also **Appendix 8**):

(87) /spl/
piíti (E *split*) 'to split' (Johnson 1974, p. 120)
/str/
taánga (E *strong*) 'strong' (Smith 1987, p. 229)
/skr/
kaási (E *scratch*) 'to scratch' (Smith 1987, p. 229)
/skw/
kpéi[23] (E *square*) 'square' (Smith 1987, p. 229)

The key forms are the Dutch-derived words *sikífi* and *sukúfu*. The last attestation in early Saramaccan of the former is *schriffi*, presumably [skrifi], in 1790, that of the latter is *skrúfu*, presumably [skrufu], in 1778. That is, /skr/ clusters initially preserved as such undergo vowel epenthesis at a later stage (for the fate of the liquid see chapter **4**).

Let me now move on to two-consonant clusters with /s/ followed by a voiceless stop (see also **Appendix 8**):

(88) /sp/
píki (E *speak*) 'to speak' (Smith 1987, p. 229)
/st/
taámpu[24] (E *stand up*) 'to stand' (Aceto 1996, p. 231)
/sk/
sinkíni (E *skin*) 'body' (Smith 1987, p. 229)

Again, when compared to their 1778 and 1779 counterparts *stoon, skin* and *skôp / skoop*, and ignoring other irrelevant developments, the modern Saramaccan forms exhibit an epenthetic vowel. In light of the above, I would like to claim, that, at some point after 1778, the strategy of /s/ deletion is abandoned. Illicit /s/-initial onset clusters, whether three- or two-consonant ones, are, from then on, subject to vowel epenthesis. Formulated in optimality-theoretic terms (Jacobs 1995, Zubritskaja 1995), a reranking of constraints takes place:

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[23] The source of coarticulated stops is Gbe, one of Saramaccan's substrate languages (cf. Parkvall 2000, pp. 39–40).

[24] Aceto (1996, p. 231) believes that *taámpu* may actually derive etymologically from Portuguese and quotes the phonologically similar form *stampó*, attested in the Portuguese creoles of Cape Verde and of Guinea-Bissau.

(89) initial ranking:
*ONS/sO, *ORALCODA, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR
reranking:
*ONS/sO, *ORALCODA, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

Let me examine the fate of onset clusters made up of /s/ and a nasal stop:

(90) /sm/
sumɛɛ (E *smell*) 'to smell' (Smith 1987, p. 329)
sumúku (E *smoke*) 'smoke' (Smith 1987, p. 199)
sumáa (E *small*) 'small' (Aceto 1996, p. 34)
/sn/
sindeki[25] (E *snake*) 'snake' (Smith 1987, p. 410)

The modern Saramaccan forms contain an epenthetic vowel whereas the corresponding 1778 and 1779 forms, *smoko*, *smâla*, *smêri* / *smeri* and *sneki*, do not. To account for these developments, we have to assume that *ONS/sN becomes at some point undominated, disallowing the occurrence of /sm/ or /sn/, whereas DEP-IO and CONTIG-IO become dominated. Again, a reranking of constraints appears to have taken place:

(91) initial ranking:
*ORALCODA, DEP-IO, CONTIGUITY, MAX-IO >> LEFT-ANCHOR, *ONS/sN
reranking:
*ONS/sN, *ORALCODA, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

Consider the one form in my corpus illustrating the treatment of the cluster /sl/:

(92) /sl/
siló (E *sloth*) 'sloth' (Sebba 1982, p. 25)

The modern Saramaccan form is identical to the 1779 one which already exhibits vowel epenthesis. In other words the reranking in (93) is already apparent in the 1779 form:

(93) initial ranking:
*ORALCODA, DEP-IO, CONTIGUITY, MAX-IO, LEFT-ANCHOR >> *ONS/sL
reranking:
*ONS/sL, *ORALCODA, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

In conclusion, vowel epenthesis, a strategy acknowledged both by Sebba (1982, p. 25) and by Smith (1987, p. 230), appears to be a later development, "in the last 200 years" (Aceto 1996, p. 25).

I now turn to the problem of the nature of the epenthetic vowel. The examples discussed confirm Sebba's (1982, p. 25) observation that the "epenthetic vowel [is] usually /i/". Indeed, [i] is inserted to break up /skr/, /st/, /sk/ and /sn/, regardless of the nature of the consonant following /s/ or of the vowel after the second consonant. The only

[25] For *nd* see note 17

exception which occurs in the case of the cluster /sm/ is already apparent in the 1779 form. Given that [u] occurs regardless of the quality of the vowel after /m/, i.e. /ɛ/, /a/ or /u/, the only trigger, common to all relevant forms, is the [LABIAL, +nasal] consonant /m/. This is an instance of transcategorial assimilation, i.e. /m/ regressively assimilates the epenthetic vowel. In optimality-theoretic terms this is captured by the following contextual markedness constraint:

(94) **V$_{\text{LAB}}$-N$_{\text{LAB}}$**: insert the [LABIAL] vowel [u] between /s/ and a [LABIAL,+nasal] consonant

Since V$_{\text{LAB}}$-N$_{\text{LAB}}$ requires the insertion of a segment at the cost of violating contiguity, it must dominate both DEP-IO and CONTIGUITY. The resulting constraint hierarchy is:

(95) *ONS/sm, *ORALCODA, LEFT-ANCHOR, MAX-IO, V$_{\text{LAB}}$-N$_{\text{LAB}}$>>DEP-IO, CONTIGUITY

An evaluation of a relevant form is given in tableau (96):

(96)

/smɛl/	*ONS/sm	*ORALCODA	L-ANCHOR	MAX-IO	V$_{\text{LAB}}$-N$_{\text{LAB}}$	DEP-IO	CONTIG
smee	*!						
mee			*!	*			
see				*!			*
☞ su.mee						*	*
si.mee					*!	*	*
is.mee		*!	*		*	*	

The form *sumúku* exhibits vowel copying[26], with the original /o/ having been raised to /u/.

As for the cluster /sw/, it is no longer permitted (see also **Appendix 8**):

(97) /sw/
sún (E *swim*) 'to swim' (Smith 1987, p. 293)
suámpu (E *swamp*) 'swamp' (Smith 1987, p. 293)

Most of the reflexes of etyma with /sw/ in the onset show the effect of the constraint UNIFORMITY-IO. The only exception is the variant *suámpu* in which the glide /w/ surfaces as the vowel [u]. In optimality-theoretic terms, two new constraints have to be posited, *ONS/OG and *G$_{\text{VOCALIZATION}}$ respectively, defined as follows:

[26] Cf. *somoko* in Ndyuka (**3.2.10**).

(98) ***ONS/OG**: obstruent + glide clusters are disallowed in the onset
(99) ***GVOCALIZATION**: vocalization of glides is prohibited

If the constraint *GVOCALIZATION is dominated by *ONS/OG, the glide /w/ surfaces as [u]. The relevant hierarchy of constraints is:

(100) *ONS/OG, *ORALCODA, MAX-IO, LEFT-ANCHOR, DEP-IO, CONTIGUITY>>*GVOCAL

The interplay of the constraints is demonstrated in the tableau below:

(101)

/swɔmp/	*ONS/OG	*ORALCODA	MAX-IO	L-ANCHOR	DEP-IO	CONTIG	*GVOCAL
swam.pu	*!						
sam.pu			*!			*	
wam.pu			*!	*			
su.wam.pu					*!*	*	
is.wam.pu		*!		*	*		
☞ su.am.pu							*

In conclusion, Saramaccan initially resorts to /s/ deletion for the resolution of illicit onset clusters made up of /s/ followed by a voiceless stop. At a later stage, such clusters are broken up by vowel epenthesis. Vowel epenthesis becomes the strategy used to reduce even clusters obeying SON-SEQ: /sm/, /sn/, and /sl/. As for the only /s/-initial onset cluster escaping vowel epenthesis, /sw/, the glide /w/ is fused with the following vowel. Since not even /sw/ is permitted in the modern variety, the sonority distance for the constraint ONSSON is n ≥4.

3.2.10 Special case 2: Ndyuka

The analysis hereinafter is based on data from Smith (1987), from Huttar and Huttar (1972 and 1994), and Anon. (2003a). There are no records of early Ndyuka[27], to the best of my knowledge. However, something about the historical development of Ndyuka phonology can be inferred from an examination of current forms. Consider first reflexes of three-consonant /s/-initial onset clusters:

(102) /spl/
piiti (E *split*) 'to split' (Huttar and Huttar 1994, p. 623)
/str/
taánga (E *strong*) 'strong' (Smith 1987, p. 229)
/skr/
kaási (E *scratch*) 'to scratch' (Smith 1987, p. 229)
/skw/
kweli (E *square*) 'to trim' (Huttar and Huttar 1994, p. 235)

Clearly then, as has been noted by several authors (Alleyne 1980, Sebba 1982, Smith 1987), three-consonant clusters in English etyma made up of /s/ followed by a voiceless

[27] Also known as Djuka (Hancock 1971) and Johnson (1974) or Ndjuka (Smith 1987).

stop plus a liquid or a glide undergo /s/ deletion. Like Sranan (**3.2.6**) and Saramaccan (**3.2.9**), Ndyuka permits only [+nasal] consonants in the coda. Consequently, the same constraint *ORALCODA, posited for Sranan (**3.2.6**) and Saramaccan (**3.2.9**), holds in Ndyuka as well. The initial ranking of constraints seems to have been:

(103) *ONS/sO, *ORALCODA, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR

The correctness of this ranking is confirmed if we consider e.g. *kweli*:

(104)

/skweər /	*ONS/sO	*ORALCODA	DEP-IO	CONTIG	MAX-IO	L-ANCHOR
skwe.li	*!					
☞ kwe.li					*	*
swe.li				*	*	
si.kwe.li			*!	*		
is.kwe.li		*!	*			*

There is evidence showing that, at a later stage, the phonology of Ndyuka undergoes a reranking of constraints. Consider the Ndyuka reflexes of the following Dutch borrowings containing three-consonant clusters in onset position:

(105) /str/
sitaafu (D *straf*) 'punishment' (Huttar and Huttar 1994, p. 241)
/skr/
sikiifi (D *schrijven*) 'to write' (Huttar and Huttar 1994, p. 471)

The treatment of the liquid /r/ need not concern us here (see chapter **4**). Note that the epenthetic vowel is [i]. To account for these instances of vowel epenthesis, I assume the constraint hierarchy (106):

(106) *ONS/sO, *ORALCODA, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

Consider the evaluation in the following tableau:

(107)

/straf/	*ONS/sO	*ORALCODA	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
staa.fu	*!					
taa.fu			*!	*		
saa.fu			*!			*
☞ si.taa.fu					*	*
is.taa.fu		*!		*	*	

If we compare the constraint hierarchy for reflexes of English and of Dutch etyma respectively, the reranking of constraints becomes readily apparent:

(108) English etyma:
*ONS/sO, *ORALCODA, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR
Dutch etyma:
*ONS/sO, *ORALCODA, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

Two-consonant clusters made up of /s/ plus a voiceless stop have to be analyzed separately. Consider first Ndyuka reflexes of /sp/ in the onset of English etyma:

(109) /sp/

píki (E *speak*) 'to answer' (Smith 1987, p. 229)
póli (E *spoil*) 'to spoil' (Smith 1987, p. 229)
supún (E *spoon*) 'spoon' (Smith 1987, p. 229)

Clearly, two strategies, /s/ deletion and vowel epenthesis, operate for the resolution of this illicit cluster. The first such strategy, /s/ deletion, is captured by the ranking:

(110) *Ons/sp, *OralCoda, Dep-IO, Contiguity >> Max-IO, Left-Anchor

The evaluation of e.g. *piki* is shown in the tableau below:

(111)

/spi:k/	*Ons/sp	*OralCoda	Dep-IO	Contig	Max-IO	L-Anchor
spi.ki	*!					
☞ pi.ki					*	*
si.ki				*	*	
si.pi.ki			*!	*		
is.pi.ki		*!	*			*

Alternatively, the cluster /sp/ is broken up via vowel epenthesis. As for the quality of the epenthetic vowel several competing analyses are possible. At first sight, it may be regarded as an instance of vowel copying. Another possibility would be to analyze it as a case of vowel harmony in terms of the feature [LABIAL]. For reasons that will become clear below, I would like to claim that a form such as *supun* illustrates transcategorial assimilation of the V-to-C type, i.e. assimilation of a vowel to the following consonant. On this view, after /s/, the [LABIAL] vowel [u] is epenthesized in front of a [LABIAL] consonant /p/. To capture this in optimality-theoretic terms I suggest the following contextual markedness constraint:

(112) **V_{LAB}-C_{LAB}**: insert the [LABIAL] vowel [u] between /s/ and a [LABIAL] consonant

The constraint V_{LAB}-C_{LAB} is undominated and it crucially outranks both Dep-IO and Contiguity, but it does not interact with *Ons/sO, *OralCoda, Left-Anchor and Max-IO. Obviously, it secures the elimination of candidates with an epenthetic vowel that is not [LABIAL]. The constraint hierarchy is:

(113) *Ons/sp, *OralCoda, Left-Anchor, Max-IO, V_{LAB}-C_{LAB}>>Dep-IO, Contiguity

The evaluation for the form *supun* is shown below:

(114)

/spu:n/	*Ons/sp	*OralCoda	L-Anchor	Max-IO	V_{LAB}-C_{LAB}	Dep-IO	Contig
spun	*!						
pun			*!	*			
sun				*!			*
☞ su.pun						*	*
si.pun					*!	*	*
is.pun		*!	*		*	*	

Consider next the treatment of the cluster /st/ (see also **Appendix 9**):

(115) /st/

tíki (E *stick*) 'stick' (Smith 1987, p. 229)
sitón (E *stone*) 'stone' (Smith 1987, p. 229)

Again, most of the relevant forms exhibit the effect of /s/ deletion, captured by the familiar ranking in (116):

(116) *ONS/st, *ORALCODA, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR

An evaluation of a relevant form is given below:

(117)

/stɪk/	*ONS/st	*ORALCODA	DEP-IO	CONTIG	MAX-IO	L-ANCHOR
sti.ki	*!					
☞ ti.ki					*	*
si.ki				*!	*	
si.ti.ki			*!	*		
is.ti.ki		*!	*			*

However, in e.g. *siton*, the cluster /st/ is broken up by an epenthetic vowel. This time, the epenthetic vowel is [i]. V_{LAB}-C_{LAB} eliminates competing output forms, such as [suton], in which the epenthetic vowel is [LABIAL] even though the following consonant is not. The suggested ranking is:

(118) *ONS/st, *ORALCODA, LEFT-ANCHOR, MAX-IO, V_{LAB}-C_{LAB}>>DEP-IO, CONTIGUITY

The ranking is confirmed by the evaluation in the next tableau:

(119)

/stəʊn/	*ONS/st	*ORALCODA	L-ANCHOR	MAX-IO	V_{LAB}-C_{LAB}	DEP-IO	CONTIG
ston	*!						
ton			*!	*			*
son				*!			*
☞ si.ton						*	*
su.ton					*!	*	*
is.ton					*!	*	

Finally, let me turn to the reflexes of the cluster /sk/ in Ndyuka:

(120) /sk/

sikoo (D *school*) 'school' (Huttar and Huttar 1994, p. 394)

In the case of /sk/ then, the only strategy applied for the resolution of this illicit cluster seems to be the epenthesis of [i]. Deletion of /s/ is not an available option, as was the case of /sp/ and /st/. The constraint MAX-IO is undominated and outranks DEP-IO and CONTIGUITY. The constraints are ranked as follows:

(121) *ONS/sk, *ORALCODA, LEFT-ANCHOR, MAX-IO >> DEP-IO, CONTIGUITY.

The form *sikoo* emerges as the optimal output:

(122)

/sxo:l/	*ONS/sk	*ORALCODA	L-ANCHOR	MAX-IO	DEP-IO	CONTIG
skoo	*!					
koo			*!	*		*
soo				*!		*
☞ si.koo					*	*
is.koo		*!	*		*	

In conclusion, [i] is the default epenthetic vowel. This conclusion is confirmed if we examine the treatment of the clusters made up of /s/ plus a voiceless stop in borrowings (including later ones) from Dutch:

(123) /sp/

sipikii (D *spijker*) 'nail' (Huttar and Huttar 1994, p. 401)
sipoiti (D *spuiten*) 'to spray' (Huttar and Huttar 1994, p. 422)

/st/

sitemu (D *stemmen*) 'to vote' (Huttar and Huttar 1994, p. 263)

/sk/

sikapu (D *schaap*) 'sheep' (Huttar and Huttar 1994, p. 389)
sikoo (D *schouder*) 'shoulder' (Huttar and Huttar 1994, p. 394)

In borrowings from Dutch, [i] emerges as the epenthetic vowel even in contexts in which [u] would be expected to occur. In forms such as *sipoiti* the expected epenthetic vowel is [u], given the [LABIAL] consonant /p/. It would seem then that the range of phonological contexts in which epenthetic [i] occurs has extended and now covers contexts formerly requiring that the epenthetic vowel should be [u].

Next, I will look at the clusters made up of /s/ followed by the nasal stop /m/:

(124) /sm/

somoko (E *smoke*) 'to smoke' (Huttar and Huttar 1994, p. 502)
sumaa (E *small*) 'small' (Huttar and Huttar 1994, p. 623)
sumée (E *smell*) 'to smell' (Smith 1987, p. 329)

Note first that /s/ is never deleted in front of /m/. Since the cluster /sm/ is broken up by epenthesis, MAX-IO outranks both DEP-IO and CONTIGUITY. The epenthetic vowel is [LABIAL] in all the relevant forms. A case could be made for either vowel copying or for vowel harmony in *somoko*, but not in *sumee*. Once again then, it is the [LABIAL] consonant /m/ which dictates the quality of the epenthetic vowel. This is precisely what is captured by positing the constraint V_{LAB}-C_{LAB}. As for *somoko*, I assume that [u] is lowered to [o] if the reflex of the vowel in the etymon is [o]. The constraint hierarchy is:

(125) *ONS/sm,*ORALCODA, LEFT-ANCHOR, MAX-IO, V_{LAB}-C_{LAB}>>DEP-IO, CONTIGUITY

The interaction of the constraints is illustrated in the tableau below:

(126)

/smɛl/	*ONS/sm	*ORALCODA	L-ANCHOR	MAX-IO	V_{LAB}-C_{LAB}	DEP-IO	CONTIG
smee	*!						
mee			*!	*			
see				*!			*
☞ su.mee						*	*
si.mee					*!	*	*
is.mee		*!	*		*	*	

One further piece of evidence can be adduced in favour of the analysis above. The onset cluster /sm/ in, presumably later, borrowings from Dutch, is treated exactly as in the reflexes of English etyma containing this cluster. Consider the following example:

(127) *sumaa* (D *smal*) 'narrow' (Huttar and Huttar 1994, p. 371)

Next, I examine how Ndyuka handles the /sn/ cluster:

(128) /sn/
sineki (E *snake*) 'snake' (Smith 1987, p. 410)
sinolu (E *snore*) 'to snore' (Smith 1987, p. 334)

Reflexes of /sn/ in onset position always exhibit the epenthetic [CORONAL] vowel [i], regardless of the type of vowel in the following syllable. In other words, in such cases neither vowel copying nor vowel harmony occurs. Epenthetic [i] is simply the default vowel occurring before consonants that are not [LABIAL]. The suggested constraint hierarchy is:

(129) *ONS/sn, *ORALCODA, LEFT-ANCHOR, MAX-IO >> DEP-IO, CONTIG-IO

Tableau (130) illustrates this ranking:

(130)

/sneik/	*ONS/sn	*ORALCODA	L-ANCHOR	MAX-IO	DEP-IO	CONTIG
sne.ki	*!					
ne.ki			*!	*		
se.ki				*!		*
☞ sine.ki					*	*
so.ne.ki					*	*
is.ne.ki		*!	*		*	

Consider next the treatment of the cluster /sl/:

(131) /sl/
siíbi (E *sleep*) 'to sleep' (Smith 1987, p. 365)

The current form suggests the historical development **silibi* > *siibi*. The loss of the liquid /l/ in intervocalic position is of no concern here. *ONS/sL prohibits the occurrence in the onset of the cluster /sl/. The original constraint hierarchy must have been:

(132) *ONS/sL, *ORALCODA, MAX-IO, LEFT-ANCHOR, >> DEP-IO, CONTIGUITY

This is illustrated in the tableau below in which the original optimal output is the reconstructed Ndjuka form **silibi*:

(133)

/sli:p/	*ONS/sL	*ORALCODA	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
sli.bi	*!					
li.bi			*!	*		
si.bi			*!			*
☞ *si.li.bi					*	*
so.li.bi					*	*
is.li.bi		*!		*	*	

As for the cluster /sw/, it undergoes the widest variety of treatments. Consider the examples below (and in **Appendix 9**):

(134) /sw/

síbi (E *sweep*) 'to sweep' (Smith 1987, p. 173)
suti (E *sweet*) 'sweet' (Huttar and Huttar 1994, p. 593)
[suweŋ] (E *swim*) 'to swim' (Huttar and Huttar 1994, p. 548)
switi (E *sweet*) 'sweet' (Huttar and Huttar 1994, p. 89)

As can be seen, /s/ is not deleted. In fact, /sw/ is the only cluster beginning with /s/ in the lexifier whose reflexes in Ndyuka never include instances of the consonant closest to the left edge, i.e. /s/, being deleted. This means LEFT-ANCHOR is ranked high and is undominated. Let me first account for forms such as *switi*, which preserve the cluster /sw/. I assume a low ranking of *ONS/sw. I propose the ranking:

(135) *ORALCODA, LEFT-ANCHOR, MAX-IO, DEP-IO, CONTIGUITY >> *ONS/sw:

Tableau (136) shows the evaluation for *switi*:

(136)

/swi:t/	*ORALCODA	L-ANCHOR	MAX-IO	DEP-IO	CONTIG	*ONS/sw
☞ swi.ti						*
wi.ti			*!			
si.ti			*!		*	
su.wi.ti				*!	*	
is.wi.ti	*!	*		*		

Consider next *sipi*. In this form /w/ is deleted, which violates MAX-IO. The deletion of /w/ leads to /s/ and /i/ becoming adjacent, in violation of CONTIGUITY. Since /sw/ no loger surfaces this means *ONS/sw is undominated. I propose the following constraint hierarchy:

(137) *ONS/sw, *ORALCODA, LEFT-ANCHOR, DEP-IO >> MAX-IO, CONTIGUITY

This ranking is confirmed by the evaluation in the following tableau:

(138)

/swi:p	*ONS/sw	*ORALCODA	L-ANCHOR	DEP-IO	MAX-IO	CONTIG
swi.bi	*!					
wi.bi			*!		*	
☞ si.bi					*	*
su.wi.bi				*!		*
is.wi.bi		*!	*	*		

A third possibility is illustrated by [suweŋ]. The cluster /sw/ does not surface, there is no deletion, but [u] is epenthesized and, consequently, /s/ and /w/ are no longer contiguous in the optimal output form. Note also that epenthetic [u] is [LABIAL] as is the following glide. This is yet another case of transcategorial assimilation. Here again then the constraint V_{LAB}-C_{LAB} is at work and secures the rejection of candidates with an epenthetic vowel which is not [LABIAL], e.g. [siweŋ]. To capture this I suggest the ranking in (139) confirmed by the evaluation in (140):

(139) *ONS/sw,*ORALCODA, LEFT-ANCHOR, MAX-IO, V_{LAB}-C_{LAB}>>DEP-IO, CONTIGUITY

(140)

/swim/	*ONS/ sw	*ORALCODA	L-ANCHOR	MAX-IO	V_{LAB}-C_{LAB}	DEP-IO	CONTIG
sweŋ	*!						
weŋ			*!	*			
seŋ				*!			*
☞ su.weŋ						*	*
si.weŋ					*!	*	*
is.weŋ		*!	*			*	

Finally, *suti* illustrates the fusion or coalescence of the glide /w/ with the following vowel [i]. The result is the [LABIAL] vowel [u]. As in Saramaccan (see **3.2.9**), this is expressed by the constraint hierarchy:

(141) *ONS/sw, *ORALCODA, LEFT-ANCHOR, MAX-IO, CONTIGUITY >> UNIFORMITY-IO.

The correctness of this ranking is demonstrated below:

(142)

/swi:t/	*ONS/sw	*ORALCODA	L-ANCHOR	DEP-IO	MAX-IO	CONTIG	UNIFORM-IO
swi.ti	*!						
☞ su.ti							*
su.wi.ti				*!		*	
wi.ti			*!		*		
si.ti					*!	*	
is.wi.ti		*!	*	*			

The various reflexes of /sw/, including variants such as *suti*, in which the glide is not preserved as such are, in all likelihood, relics of past developments in Ndyuka. Indeed, /sw/ is listed among the clusters permitted in onset position (Huttar and Huttar 1994, p. 553). For clusters starting with /s/, the current value of ONSSON is n $\geq$3, but may perhaps have been n $\geq$4.

3.3 Modern Atlantic English pidgins and creoles

3.3.1 Krio

The analysis that follows is based on data from Berry (1961), Jones (1971) and Fyle and Jones (1980). Consider first the treatment in onset position of clusters with /s/ followed by a voiceless stop (see also **Appendix 10**):

(143) /spl/
plit (E *split*) 'to split' (Fyle and Jones 1980, p. 292)
/spr/
prɛd (E *spread*) 'to spread' (Jones 1971, p. 70)
/str/
tranga (E *strong*) 'hard, strong' (Fyle and Jones 1980, p. 374)
/skr/
krach (E *scratch*) 'to scratch; scratch' (Fyle and Jones 1980, p. 199)
/skw/
kwis (E *squeeze*) 'to squeeze, crush' (Fyle and Jones 1980, p. 210)
/sp/
pit (E *spit*) 'to spit (out); spittle' (Fyle and Jones 1980, p. 292)
/st/
tan (E *stand*) 'to stand, look as if' (Fyle and Jones 1980, p. 359)

With respect to the reflexes of theses clusters, Berry (1961, p. 3) mentions coexistent early forms and later corrections in Krio itself (/pun/ ~ /spun/, 'spoon'). Jones (1971, p. 70) also notes that "these sound changes do not occur in all borrowings in current Krio". She goes on to add that "it may well be that many words reverted to their English forms because of the continuing and increasing contact between the two languages, in a situation where its exclusive use in education confers a superior status on English" (Jones 1971, p. 71). Finally, Berry (1961, p. 5) mentions, as one manifestation of what he calls "hyper-creolization": "a preference for the uncorrected forms of English loans: /pun/ [is] retained though /spun/ [is] now fairly general for 'spoon". It follows that, if simplification or reduction occurs, the relevant constraint hierarchy is:

(144) *Ons/sO, Dep-IO, Contiguity >> Max-IO, Left-Anchor

Consider the evaluation below:

(145)

/spit/	*Ons/sO	Dep-IO	Contig	Max-IO	L-Anchor
spit	*!				
☞ pit				*	*
sit			*!	*	
si.pit		*!	*		
is.pit		*!			*

All the other /s/-initial clusters are preserved in onset position:

(146) /sm/

smok (E *smoke*) '(to) smoke' (Fyle and Jones 1980, p. 342)

/sn/

snɛk (E *snake*) 'snake' (Fyle and Jones 1980, p. 343)

/sl/

slip (E *sleep*) '(to) sleep' (Fyle and Jones 1980, p. 341)

/sw/

swim (E *swim*) 'to swim' (Fyle and Jones 1980, p. 357)

In conclusion, in modern Krio /s/-initial onset clusters are illicit if /s/ is followed in the etymon by a voiceless stop. All /s/-initial clusters which do not violate the constraint SON-SEQ are permitted. In terms of the constraint ONSSON, its value is set at n $\geq$1.

3.3.2 Ghanaian Pidgin English

The analysis that follows is based on data from Huber and Görlach (1996), and Huber (1995 and 1999b). Huber (1999b, p. 170) states that 'Gha PE [...] allows quite complex syllables'. He even lays emphasis on this fact and writes that this is "[c]ontrary to the prevalent notion that Pidgins and Creoles lack complex syllables" but similar to "other WAPEs [West African Pidgin Englishes]". Incidentally, his argument is somewhat weakened by his reference, in the context, to Nigerian Pidgin English, studied by Faraclas (1996). Whereas Huber (1999b) is essentially an investigation into basilectal Ghanaian Pidgin English, Faraclas (1996) analyses mesolectal Nigerian Pidgin English (see **3.3.3.7**).

As for three-consonant clusters in the onset, the "permissible combinations are /spr/, /spl/, /spj/, /str/ /stj/ and /skr/ /skj/ /skw/" (Huber 1999b, p. 172). In terms of their frequency in the corpus, "except for /spr/, /spl/, /str/, these clusters are quite rare" (Huber 1999b, p. 172). The only two-consonant clusters occurring in the onset are, according to Huber (1999b, pp. 171–172), /sp/, /st/, and /sk/. On this analysis, Ghanaian Pidgin English appears to permit in the onset a number of three- and two-consonant clusters beginning with /s/. Nonetheless, since in this thesis I focus on basilectal varieties, it is important to note that, according to Huber (1999b, p. 172) "consonant clusters are frequently simplified [...] especially towards the basilectal end of the continuum". Two strategies are at work here: "syllables are often regularized towards a CV structure either by elision of one member in consonant clusters, or by insertion of an epenthetic [...] vowel" (Huber 1999b, p. 174).

Three-consonant clusters, such as /str/, are simplified either to /sr/, through the deletion of /t/, or to /sVr/, through the deletion of /t/ and the insertion of an epenthetic vowel (Huber 1999b, p. 174). The epenthetic vowel is a copy of the tone-bearing vowel of the syllable containing the cluster (Huber 1999b, p. 174). Consider the following examples:

(147) /str/

[strɔŋ] ~ [srɔŋ] ~ [s^{ə}rɔŋ] (E *strong*) ‘strong’ (Huber 199b, p. 174)

[strenʤa] ~ [srenʤa] ~ [s^{e}renʤa] (E *stranger*) ‘stranger’ (Huber 199b, p. 174)

The first strategy is captured by the ranking:

(148) *ONS/sO, DEP-IO, LEFT-ANCHOR >> MAX-IO, CONTIGUITY:

The evaluation of one of the possible outputs is shown below:

(149)

/streinʤə/	*ONS/sO	DEP-IO	L-ANCHOR	MAX-IO	CONTIG
stren.ʤa	*!				
tren.ʤa			*!	*	
es.tren.ʤa		*!	*		
se.tren.ʤa		*!			*
se.ren.ʤa		*!			*
☞ sre.nʤa			*!	*	*

As for the second strategy, note the difference between the treatment of such clusters in Ghanaian Pidgin English and other Atlantic English pidgins and creoles, including the closely related Krio (**3.3.1**), Nigerian Pidgin English (**3.3.3**) and Cameroon Pidgin English (**3.3.4**). Ghanaian Pidgin English, while disallowing /s/ + obstruent clusters in the onset, may simplify such illicit clusters by preserving the leftmost consonant, i.e. the /s/, and deleting the voiceless stop. To account for the second strategy the constraint COPY needs to be added:

(150) **COPY**: epenthesize a copy of the etymological vowel.

This constraint eliminates candidates such as e.g. [si.ren.ʤa] in which the epenthetic vowel is not a copy of the vowel after the original cluster. COPY must dominate DEP-IO and MAX-IO. The relevant ranking is:

(151) *ONS/sO, LEFT-ANCHOR, CONTIGUITY, COPY >> DEP-IO, MAX-IO

The optimal candidate is therefore [serenʤa]:

(152)

/strenʤa/	*ONS/sO	L-ANCHOR	CONTIG	COPY	DEP-IO	MAX-IO
stren.ʤa	*!					
tren.ʤa		*!				*
es.tren.ʤa		*!			*	
se.tren.ʤa			*!		*	
☞ se.ren.ʤa					*	
si.ren.ʤa				*!		
sre.nʤa			*!			

As for two-consonant clusters, the only strategy conducive to their reduction is that of vowel epenthesis. As mentioned above, in epenthesis the tone-bearing vowel of the syllable containing the illicit cluster is copied. Consider the example below:

(153) /sk/

suku (E *school*) 'school' (Huber and Görlach 1996, p. 255)

I propose the following constraint hierarchy to account for vowel copying:

(154) *ONS/sO, MAX-IO, LEFT-ANCHOR, COPY >> DEP-IO, CONTIGUITY

The constraint COPY eliminates a candidate such as [su.kin] and outranks DEP-IO and CONTIGUITY. The ranking is confirmed by the evaluation in the tableau below:

(155)

/skin/	*ONS/sO	MAX-IO	L-ANCHOR	COPY	DEP-IO	CONTIG
skin	*1					
kin		*!	*			
sin		*!				*
☞ si.kin					*	*
su.kin				*!		
is.kin			*!		*	

The clusters /sm/, /sn/, /sl/, /sw/ are not listed among those permitted in onset position, even though they would not violate the constraint SON-SEQ. However, at least three of these clusters, /sm/, /sl/, and /sw/, do occur actually in the samples of Ghanaian Pidgin English in Huber (1999b):

(156) /sm/

smɛl (E *smell*) 'smell' (Huber 1999, p. 250)

/sl/

slip (E *sleep*) 'to sleep' (Huber 1999b, p. 178)

/sw/

swit (E *sweet*) 'to please' (Huber 1999b, p. 190)

Let me note that I have found counterexamples involving the cluster /sm/. Thus, in one of Huber's pidgin-proper versions of the "minimal" Ghanaian Pidgin English texts in Huber and Görlach (1996) and Huber (1999b) I have come across the following examples:

(157) /sm/

sumɔ (E *small*) 'small' (Huber and Görlach 1996, p. 255)

sumok (E *smoke*) 'to smoke' (Huber 1999b, p. 284)

Clearly, in these examples the epenthetic vowel is not a copy of the vowel in the syllable containing the illicit cluster. Since /ɔ/ is a [LABIAL] vowel, and so is /u/, this could be an instance of vowel harmony. On the other hand, the epenthetic [u] could be equally well the result of transcategorial assimilation to the following [LABIAL] consonant /m/. Ignoring, then, such occasional exceptions, one may conclude that in Ghanaian Pidgin

English /s/-initial clusters that do not violate SON-SEQ are permitted. The value of ONSSON is n ≥1.

3.3.3 Nigerian Pidgin English

3.3.3.1 Introduction

Nigerian Pidgin English is a label, perhaps convenient, for a number of varieties of Pidgin English spoken in Nigeria (Mafeni 1971, Agheisy 1984 and 1988). In fact, even the word "pidgin" may be a misnomer, at least in the case of some speakers (Mafeni 1971, Shnukal and Marchese 1983). The socio-linguistic status of Nigerian Pidgin English is a matter of some dispute in the literature (Mafeni 1971, Eze 1980, Adegbija 1994, and Mann 2000). Consequently, the descriptions to date vary greatly, and they may more often than not look at different varieties of Nigerian Pidgin English. The analysis that follows is based on data from Mafeni (1971), Obilade (1976), Barbag-Stoll (1983), Shnukal and Marchese (1983), Agheisi (1984 and 1988), Elugbe and Omamor (1991), and Faraclas (1996).

3.3.3.2 Kano Nigerian Pidgin English

Mafeni (1971, pp. 107-110) outlines the phonology of an urban variety of Nigerian Pidgin English spoken in Kano, said to be "fairly anglicised". This is a so-called *sabon gari* variety, that is to say one used by "the *sabon-garis* (stranger-communities) in the North" (Mafeni 1971, p. 99). In his brief sketch of the syllable structure of Nigerian Pidgin English, Mafeni (1971, p. 108) lists, among others, CCV and CCVCC as patterns occurring in the language. However, Mafeni (1971, p. 108) then qualifies his statements. He thus mentions that whereas three-consonant clusters may occur in "anglicised Pidgin" in the onset, "[c]onservative speakers tend to avoid clusters altogether". I interpret "conservative speakers" as meaning speakers of a basilectal variety of Nigerian Pidgin English.

Speakers of basilectal Nigerian Pidgin English resort, according to Mafeni (1971, p. 108) to two strategies in order to break up illicit clusters made up of /s/ plus a voiceless stop. One strategy is "dropping one member of the cluster":

(158) /sp/
    pún[28] (E *spoon*) 'spoon' (Mafeni 1971, p. 108)

The other strategy is "vocalic intrusion", in other words vocalic epenthesis, as illustrated by the following example:

(159) /sp/

[28] In the Nigerian Pidgin English forms,′ = carrying high, and ` = carrying low tone.

sìpík (E *speak*) 'to speak' (Mafeni 1971, p. 108)

Unfortunately, the treatment of the clusters /sm/, /sn/, /sl/, and /sw/ is not discussed. Presumably, some of these at least would also be reduced by speakers of basilectal Nigerian Pidgin English, who are said to avoid any cluster in onset position. However, from Mafeni's (1971) sketch of Nigerian Pidgin English syllable structure one cannot infer which strategy is used to reduce the illicit clusters at issue.

3.3.3.3 Nigerian Pidgin English

In his discussion of the phonology of modern Nigerian Pidgin English, Obilade (1976, p. 17) first states that "the dominant syllabic pattern is CV". As for the reflexes in modern Nigerian Pidgin of etyma with "clusters consisting of /s/ plus a voiceless stop" they "are more common" (Obilade 1976, p. 17). This claim is, however, soon contradicted by the author's own data and comments. Obilade's analysis starts from *spoil*, *stick*, *stranger*, *strong*, which "behave differently when assumed into NPE" (Obilade 1976, p. 18). A number of strategies seem to be at work here, since "the adaptation of such forms [...] vary from a strong vocalization of the initial consonant to its deletion" (Obilade 1976, p. 18).

As for what Obilade (1976, p. 32) calls "[t]riple consonant clusters", these "are not permissible". Such illicit three-consonant clusters made up of /s/ followed by a voiceless stop and a liquid are reduced by means of deletion of /s/. For instance, the reflex in modern Nigerian Pidgin English of E *strong* is [trông] (Obilade 1976, p. 32).

In reflexes of etyma with /s/ followed by a voiceless stop only, e.g. *spoil*, *stick*, "the initial /s/ is either vocalized or an epenthetic vowel is introduced to break the cluster" (Obilade 1976, p. 18). Again rather inconsistently, he then only mentions that "the phonetic output would include an epenthetic vowel which occurs between [sic] the initial cluster", while no reference is made, at this point, to the "vocalization" of /s/. In addition, "there is a strong indication that there is vowel harmony here" (Obilade 1976, p. 18). Thus, in the modern Nigerian Pidgin English reflex of E *school*, "we have the vowel /u/ between [sic] the initial cluster", and in the reflex of E *stick* "we have the vowel /i/" (Obilade 1976, p. 18). However, the examples discussed might equally well be analysed as instances of vowel copying. Obilade (1976, p. 18) only comments that "[i]t is interesting to note that only the high front and the high back vowels are used epenthetically". This claim is, however, not falsifiable on the basis of Obilade's empirical data. Indeed, no examples are provided showing how etyma with clusters made up of /s/

plus a voiceless stop followed by a vowel other than /i/ or /u/, e.g. E *spoil*, mentioned by Obilade (1976, p. 18), are adapted.

To confuse matters still, Obilade (1976, p. 32) comes back to the issue of what he calls "two-phoneme clusters, the first consonant [of which] in most cases is subject to certain phonetic modifications". First, what appears to be the vocalization of /s/ is mentioned again. Thus, "in skûl (school) the "s" is lengthened" and "in stîk (stick) the "s" is lengthened and somewhat openly released" (Obilade 1976, p. 32). These are, presumably, instances of /s/ syllabification. The difference between the treatment of [s] in [skul] and in [stik] respectively is, however, not clear. Second, the reflex of E *school* had been previously presented as [sukul], with epenthetic [u], which is no longer mentioned as an alternative phonetic realization. Third, it is only for the reflex of E *stick* that the possible occurrence of an epenthetic vowel is also acknowledged. Finally, the [i] in the alternative reflex of E *stick* is mentioned as if this vowel occurred irrespectively of the nature of the vowel after the illicit cluster, i.e. as a default vowel this time. Obilade's discussion of the treatment of two-consonant clusters is anyway incomplete since reflexes of two-consonant clusters made up of /s/ plus a nasal in the etyma and of /s/ plus the lateral liquid /l/ are not mentioned at all.

3.3.3.4 Yoruba Nigerian Pidgin English

Barbag-Stoll (1983) analyses the variety of modern Nigerian Pidgin English spoken by Yorubas. The variety she studies is thus "Yoruba pidgin", in the sense of Agheyisi (1988, p. 230), in terms of phonological influence. This variety is sometimes referred to as "the 'western' dialect" in the literature (Agheyisi 1988, p. 231). On the other hand, I do not think this variety should be seen as necessarily reflecting "regional variation" (Agheyisi 1988, p. 230), since, according to Eze (1980, p. 65), "[t]he Nigerian pidgin phonology [...] is more closely related to the Yoruba than to any other tribal language".

As with other analyses of modern Nigerian Pidgin English, Barbag-Stoll starts by noting that "there is a strong tendency [...] to preserve the typical West African CVCV pattern" (Barbag-Stoll 1983, p. 61). According to Barbag-Stoll (1983), all onset clusters are prohibited. The various strategies (Barbag-Stoll 1983, pp. 61–71) used to achieve the "ideal" goal of obtaining a CVCV syllable structure include reduction of illicit consonant clusters by aphesis. Since all examples of aphesis contain clusters with /s/ followed by a voiceless stop or /s/ followed by a voiceless stop and a liquid, it seems that they are singled out for this treatment. Consider the examples below:

(160) /str/
/trɔng/ (E *strong*) ‘greedy’ (Barbag-Stoll 1983, p. 62)
/st/
/tanda/ (E *stand*) ‘to stand’ (Barbag-Stoll 1983, p. 62)
/tori/ (E *story*) ‘story’ (Barbag-Stoll 1983, p. 62)

Two remarks are in order here. First, as mentioned above, the resolution of both /str/ and /st/ clusters occurring in the corresponding etyma consists in the deletion of /s/. In other words, both three- and two-consonant clusters are uniformly treated. Second, vocalic epenthesis appears not to be an available option.

Among the many examples discussed by Barbag-Stoll there is only one illustrating the treatment of clusters made up of /s/ and a nasal stop:

(161) /sm/
/sumoki/ (E *smoke*) ‘smoke’ (Barbag-Stoll 1983, p. 66)

Assuming the example above is typical of the treatment of etyma with clusters consisting of /s/ plus a nasal consonant, it follows that the strategy involved is that of vocalic epenthesis. Since the “root vowel” in the sense of Barbag-Stoll (1983, p. 66) is /ɔ/ whereas the epenthetic vowel is /u/, both [LABIAL] vowels, this may be an instance of vowel harmony[29] (see **3.3.2**). The [LABIAL] nasal stop /m/ may also account for the occurrence of /u/. One might therefore speculate that the epenthetic vowel is [u] if followed by a [LABIAL] segment in the next syllable (see section **3.3.7** on modern Jamaican for details). The treatment of the onset cluster /sn/ is not illustrated.

The onset cluster consisting of /s/ and the liquid /l/ is subject to epenthesis:

(162) *silip* (E *sleep*) ‘to sleep’ (Barbag-Stoll 1983, p. 60)

Finally, /sw/ appears to be preserved as such.

3.3.3.5 Pidgin Proper

Agheyisi (1984) discusses and illustrates with textual samples two varieties of Nigerian Pidgin English. One of these is referred to as “Pidgin-proper” (Agheyisi 1984, p. 216), which “approximates to the purest form of the English-based Pidgin” (Agheyisi 1984, p. 214). It is to this variety that I will now turn. In what follows, Nigerian Pidgin English thus refers to “Pidgin-proper” in the sense of Agheyisi (1984). The second variety, “the kind of pidgin used widely by people who lack full linguistic competence in the language” (Ageyisi 1984, p. 222), will not be considered here. Agheyisi (1984) addresses primarily issues other than phonology. She only mentions that the phonology of

[29] Or rather of partial vowel harmony, since the paragogic vowel is neither back nor rounded.

Nigerian] Pidgin English is characterized, among others, by "reduction of consonant clusters" and "a tendency toward open rather than closed syllable structure" (Agheyisi 1984, p. 215).

I have gone through all the samples of Nigerian Pidgin English in Agheyisi (1984, pp. 215-229, and 1988) or by Agheyisi in Huber and Görlach (1996). Here are the relevant instances illustrating the treatment of consonant clusters made up of /s/ plus a voiceless stop occurring in the onset of their corresponding etyma:

(163) /str/
trɔŋ (E *strong*) 'strong' (Agheyisi 1984, p. 227)
/st/
tanda (E *stand*) 'stand' (Huber and Görlach 1996, p. 242)
tori (E *story*) 'story' (Huber and Görlach 1996, p. 246)

The strategy resorted to in such cases is /s/ deletion. This finding accords well with the other descriptions of Nigerian Pidgin English phonology referred to in this subchapter.

As for the reflex in Nigerian Pidgin English of consonant clusters in onset position made up of /s/ and a nasal stop, consider the following example:

(164) /sm/
sumɔ (E *small*) 'small' (Agheyisi 1984, p. 216)

This example shows that consonant clusters of the type /s/ plus a nasal stop are simplified by means of vocalic epenthesis (as in Yoruba Nigerian Pidgin English, see **3.3.3.4**). Again, the nature of the epenthetic vowel may be determined, equally well, either by the [LABIAL] vowel /o/ or by the [LABIAL] nasal stop /m/ in the following syllable. Again, there are no instances illustrating the treatment of the onset cluster consisting of /s/ and the nasal stop /n/.

Finally, the texts in Agheyisi (1984) provide evidence for the treatment in onset position of the consonant cluster /s/ plus the liquid /l/:

(165) /sl/
silipi (E *sleep*) 'to sleep' (Agheyisi 1984, p. 227)
silip (E *sleep*) 'to sleep' (Huber and Görlach 1996, p. 248)

The strategy involved is that of vocalic epenthesis. Unfortunately, this is, again, the only relevant example in the corpus at my disposal. As for the quality of the epenthetic vowel, [i] is most likely the default case (cf. **3.3.2**)

I have found no examples relevant to the treatment of the onset cluster /sw/.

3.3.3.6 General Nigerian Pidgin English

According to Elugbe and Omamor (1991, p. 83) "clusters of two consonants are allowed [...] at the beginning [...] of syllables". They further specify that "[s]equences of

[...] 's plus voiceless plosive (i.e. **sp, st, sk**) are also common at the beginning of syllables". However, Elugbe and Omamor (1991, p. 83) also note that "in some varieties [...] these possible syllable initial clusters are broken up by the insertion of a vowel between the consonants". Although the authors do not specify what sort of varieties, I assume that it is basilectal varieties of Nigerian Pidgin English. There are only two examples involving the consonant cluster /s/ followed by a voiceless stop:

(166) /sp/
  [sipũ] (E *spoon*) 'spoon' (Elugbe and Omamor 1991, p. 83)
  /st/
  [sitɔp] (E *stop*) 'to stop' (Elugbe and Omamor 1991, p. 83)

A number of remarks are in order here. First, the only strategy available for the resolution of illicit /s/ plus voiceless stop clusters in the onset appears to be epenthesis. Second, /s/ deletion is not acknowledged at all as an alternative strategy. Third, the occurrence of epenthetic [i] both in [sipũ] and in [sitɔp] suggests that this is the default vowel, i.e. regardless of the nature of the consonant or of the vowel in the next syllable.

Unfortunately, the reflexes of the other clusters at issue, /s/ plus a nasal stop, /sl/ and /sw/, are not discussed.

3.3.3.7 Urban Port Harcourt Nigerian Pidgin English

I will only briefly discuss the latest description of a variety of Nigerian Pidgin English by Faraclas (1996). This work looks at "mesolectal varieties of Nigerian Pidgin" as spoken in "urban Port Harcourt" (Faraclas 1996, pp. 3–4). Since in the case of all the other English pidgins and creoles I have analyzed their basilectal varieties, mesolectal Nigerian Pidgin English does not offer *stricto sensu* comparable data, a fact apparently overlooked by some authors (see **3.3.2**).

Not surprisingly, mesolectal Urban Port Harcourt Nigerian Pidgin English allows both three- and two-consonant /s/-initial onset clusters. However, even in this mesolectal variety, "phonologically conditioned processes tend to reduce many of the complex syllable structures [...] to CV structured" (Faraclas 1996, p. 265) and clusters are often broken up by epenthesis. The only example provided by the author incidentally illustrates epenthesis in the case of one of the two-consonant clusters at issue, namely /st/. Note that the epenthetic vowel is [i]:

(167) /st/
  sìtíkì (E *stick*) 'stick' (Faraclas 1996, p. 265).

The frequent occurrence of epenthesis even in the mesolectal variety suggests that it should be the rule in the basilect. If this is indeed the case in basilectal urban Port

Harcourt Nigerian Pidgin English, this would accord well with the situation in the "Pidgin Proper" variety analyzed by Agheyisi (1984 and 1988).

3.3.3.8 Instead of conclusions

No clear general picture emerges from these divergent and incomplete descriptions or from analyses of different varieties of Nigerian Pidgin English. Three-consonant clusters starting with /s/ are simplified mostly by /s/ deletion, whereas two-consonant ones with /s/ followed by a voiceless stop are reduced mostly through vowel epenthesis, even in one mesolectal variety. In one variety, /s/ deletion and vowel epenthesis are alternative strategies for the reduction of two-consonant /s/-initial onset clusters. The cluster /sl/, that does not violate SON-SEQ, is reduced through vowel epenthesis. Vowel harmony appears to occur in some varieties, [u] being selected if the next vowel is a [LABIAL] one, and [i] elsewhere.

3.3.4 Cameroon Pidgin English

3.3.4.1 Introduction

As in the case of the closely related Nigerian Pidgin English (see **3.3.3**), there are several varieties of modern Cameroon Pidgin English. Useful overviews of the various types of Cameroon Pidgin English and of some of their chracteristics can be found in Schneider (1966), Todd (1979a, 1984, pp. 96–99), Todd and Jumbam (1992, pp. 6–10), de Féral (1994), and Ayafor (1996). Some of these varieties are richly illustrated by the texts in Schneider (1966, pp. 174–220) and in Todd (1982). General Cameroon Pidgin English is of late referred to by some authors (Todd and Jumbam 1992, Todd 1995, Ayafor 1996) as Kamtok.

3.3.4.2 Assimilated Pidgin English

One of the varieties of Cameroon Pidgin English illustrated in Schneider (1966) is "assimilated Pidgin-English". This variety is defined as "a version closely resembling [the speaker's] own first language" (Schneider 1966, p. 10) or as "a form of Pidgin English closely assimilated to [the speaker's] native language" (Schneider 1966, p. 11). This variety is illustrated by a folktale (Schneider 1966, p. 219) and 25 utterances (Schneider 1966, pp. 225–229). Examples relevant to the treatment in onset position of three- and two-consonant clusters beginning with /s/ followed by a voiceless stop are listed below:

(168) /str/
tilong (E *strong*) 'strong' (Schneider 1966, p. 225)
/skr/
kilas (E *scratch*) 'to scratch' (Schneider 1966, p. 227)

/st/
tanap (E *stand up*) 'to stand' (Schneider 1966, p. 219)
tat (E *start*) 'to start' (Schneider 1966, p. 219)
téy (E *stay*) 'to stay' (Schneider 1966, p. 219)
shitik (E *stick*) 'tree' (Schneider 1966, p. 219)

It would seem that in both three- and two-consonant clusters /s/ is deleted if followed by a voiceless stop in the etymon. The one exception in the corpus is *shitik*, with epenthesis, instead of the expected reflex **tik*. There is no reason to assume, given its lexical meaning, that it belongs to a layer of Assimilated Pidgin English diachronically different from the items evincing /s/ deletion. The data were obtained from one and the same speaker, who may have "transferred" the epenthesis from the form *sitik* (Schneider 1966, p. 218) in another variety, Broad Pidgin English (see **3.3.4.3**).

The following are reflexes of the onset cluster made up of /s/ plus a nasal stop:

(169) /sm/
simol (E *small*) 'a little' (Schneider 1966, p. 219)
shimel (E *smell*) 'odor' (Schneider 1966, p. 227)

Such clusters appear to be treated differently from those in which /s/ is followed by a voiceless stop. The resolution of these illicit clusters involves the epenthesis of the default vowel [i] (see also **4.3.3**). The fact that the /s/ in the etymon surfaces as [s] or [ʃ] is irrelevant here.

Clusters made up of /s/ followed by the liquid /l/ appear to be broken up by the epenthesis of the default vowel [i]. Notice again that the /s/ in the etymon surfaces as [ʃ]:

(170) /sl/
shilip (E *sleep*) 'to sleep' (Schneider 1966, p. 219)

Last, clusters containing /s/ followed by the glide /w/ are not simplified, with the /s/ in the etymon surfacing again as [ʃ]:

(171) /sw/
shwit (E *sweet*) 'sweet' (Schneider 1966, p. 219)

3.3.4.3 Broad Pidgin English

The variety of Cameroon Pidgin English actually studied by Schneider (1966) is what the author calls "Broad Pidgin English" (Schneider 1966, p. 10). Although no definition is provided, one may infer that this variety contains the shared features of many speakers with different first language backgrounds, constitutes a "common core", and may be taken as a "frame of reference" (Schneider 1966, p. 9). Broad Pidgin English differs from both Assimilated Pidgin English (see **3.3.4.2**) and a "highly anglicized version of Pidgin-English" (Schneider 1966, p. 10).

Three-consonant clusters beginning with in the onset in their etyma are simplified by means of /s/ deletion. The corpus in Schneider (1966) contains examples illustrating only the fate of /str/ and /skr/ (see also **Appendix 11**):

(172) /str/
/tréyt/ (E *straight*) 'straight' (Schneider 1966, p. 23)
/skr/
krás (E *scratch*) 'to scratch' (Schneider 1966, p. 158)

According to Schneider (1966, p. 23), the following two-consonant clusters are disallowed in onset position: /sp/, /st/, /sk/, /sm/, /sn/, /sl/, and /sw/. In optimality-theoretic terms this can be captured by assuming the constraint *ONS/sC, prohibiting the occurrence of any /s/-initial onset clusters. The first five of these illegal clusters are broken up by means of epenthesis. In all such instances it is the vowel [i] that is inserted (Schneider 1966, p. 23). In other words, [i] is the default vowel. According to Schneider (1966, p. 23)[30], the epenthetic vowel [i] carries low tone whereas the vowel in the following syllable carries high tone. Consider the following examples (see also **Appendix 11**) identified in Schneider (1966):

(173) /sp/
sipéshal (E *special*) 'special' (Schneider 1966, p. 168)
/st/
sitát (E *start*) 'to start' (Schneider 1966, p. 168)
/sk/
sikín (E *skin*) 'body' (Schneider 1966, p. 167)
/sìkúl/ (E *school*) 'school' (Schneider 1966, p. 23)
/sm/
/sìmól/ (E *small*) 'small' (Schneider 1966, p. 23)
/sn/
/sìnék/ (E *snake*) 'snake' (Schneider 1966, p. 23)
/sl/
silák (E *slack*) 'weak' (Schneider 1966, p. 168)

However, I have also found counterexamples to Schneider's claim, which may have gone unnoticed by the author (see also **Appendix 11**):

(174) *téy* (E *stay*) 'to stay' (Schneider 1966, p. 170)

These examples illustrate the resolution of illicit two-consonant /s/-initial onset clusters by means of /s/ deletion. As such they pose a problem for Schneider's analysis. Two alternative analyses are possible here. One account would assume that synchronically speakers of Broad Pidgin English resort to two strategies for the resolution of such illicit clusters: epenthesis, but also, even if more seldom, /s/ deletion. Circumstantial evidence

[30] Note, however, that Schneider (1966) does not consistently mark the tone of the epenthetic vowel.

in favour of such an interpretation comes from a closely related variety of West African Pidgin English. The coexistence of these two strategies has been noted by Mafeni (1971) for Kano Nigerian Pidgin English (see **3.3.3.2**). There is, however, a possible counterargument which would run along the following lines. Words such as *tanap*, *téy* and *tori* may be assumed to have entered Broad Pidgin English at an earlier stage in which, presumably, /s/ deletion was the only strategy used to reduce the clusters at issue. This would accord with the hypothesis in Todd (1984, p. 102), discussed in **3.2.1**. Alternatively forms such as *téy* would be illustrative of the original strategy adopted by Broad Pidgin English. A problem with this account is the lexical meaning of these forms. They are all words belonging, by all accounts, to the core vocabulary of any language. But so are many of the forms exhibiting epenthesis. Assuming basic words belong to the earliest diachronic layer of Broad Pidgin English, this cannot explain why most of the other potentially equally old forms do not evince /s/ deletion but epenthesis.

Finally, the onset cluster /sw/, while disallowed, is not simplified. Its reflex in Broad Pidgin English is /ʃw/ (see also **Appendix 11**):

(175) /sw/
shwél (E *swell*) 'to swell' (Schneider 1966, p. 23)

3.3.4.4 Kamtok

Todd has written extensively on modern Cameroon Pidgin English (Todd 1979a, 1979b, 1982, 1984; Todd and Jumbam 1992). Several varieties of Cameroon Pidgin English, duly identified, are illustrated and/or analyzed in her works. General Cameroon Pidgin English is referred to as Kamtok in her later works (e.g. Todd and Jumbam 1992, Todd 1992)

She addresses the issue of etyma with /s/-initial onset clusters in two of her works. Thus, in Todd (1979b, p. 23) she writes that "many English words containing clusters were simplified" and adds that "there is still considerable vacillation in the pronunciation of words deriving from English beginning with consonant clusters" (Todd 1979b, p. 41). Two strategies are at work (Todd 1979b, p. 23): /s/ deletion or "when the 's' was not lost an intrusive vowel was introduced" (see also **Appendix 12**):

(176) /str/
trenja (E *stranger*) 'stranger' (Todd 1979b, p. 26)
/sp/
sipia (E *spear*) 'spear' (Todd 1979b, 27)
/st/
tori (E *story*) 'story' (Todd 1979b, p. 27)

Notice first that items evincing /s/ deletion are treated as belonging to the same layer, which suggests that this strategy is available synchronically as well. If so, this would contradict Todd's claims (see **3.2.1**), according to which such words date from an earlier stage. Second, if epenthesis is an available alternative option it seems anyway to be restricted to two-consonant clusters starting with /s/. There appears thus to be a certain inconsistency in the treatment of etyma containing two-consonant clusters beginning with /s/. Note that while a word such as *tanap* is said to be an "older borrowing" (Todd 1979b, p. 41) and *tori* "the older, more conservative form" (Todd 1979b, p. 176), *sipia*, an item exhibiting epenthesis, is not commented upon.

A rather different and more detailed analysis is presented in Todd (1984). The variety described is said to reflect "the usage of fluent, articulate, literate anglophones between the ages of twenty and thirty-five" whose phonology "closely resembles the phonology of Igbo speakers of Nigerian Pidgin" (Todd 1984, pp. 99–100). The author writes that "when clusters beginning with /s/ occur there is a strong tendency to insert a vowel between the /s/ and the following consonant" (Todd 1984, p. 102). She adds that the vowel 'may differ according to the vowel in adjacent syllables' (Todd 1984, p. 102). In other words, vowel harmony dictates the selection of the epenthetic vowel. Consider the following examples:

(177) /str/
s^{i}traik (E *strike*) 'strike' (Todd 1984, p. 102)
/skr/
s^{u}kru (E *screw*) 'screw' (Todd 1984, p. 102)
/skw/
s^{u}kwanda (E *squander*) 'to squander' (Todd 1984, p. 102)
/st/
s^{i}tik (E *stik*) 'tree, stick' (Todd 1984, p. 102)
s^{i}tim (E *steam*) 'steam' (Todd 1984, p. 102)
s^{u}tadiɔm (E *stadium*) 'stadium' (Todd 1984, p. 102)
/sm/
s^{u}mɔl (E *small*) 'small' (Todd 1984, p. 102)

Todd's analysis thus differs in two important respects from that in Schneider (1966). First, etyma with three- and two-consonant clusters starting with /s/ in the onset are adjusted uniformly, by means of epenthesis. Second, epenthesis does not involve a default epenthetic vowel ([i] in Schneider's description, see **3.3.4.3**). Again, there are a number of problems with Todd's analysis. First, the treatment of the clusters /sw/ and /sl/ is not illustrated. We are left to assume that both are broken up by epenthesis. Note, however, that in other descriptions of Cameroon Pidgin English (e.g. **3.3.4.3**), while reflexes of /sl/

do involve epenthesis, /sw/ is shown not to be broken up by an epenthetic vowel. Second, in all Atlantic English pidgins and creoles, whether in their earlier stages or in the modern varieties, /sw/ is normally preserved. The only exceptions are the creoles of Suriname, in which /sw/ is occasionally reduced by deletion of the glide or merges, partially or completely, with the following vowel (see **3.2.6**, **3.2.9**, and **3.2.10**). On the basis of this, admittedly circumstantial, evidence, I would speculate that in the variety of Cameroon Pidgin English analyzed in Todd (1984), the cluster /sw/ is not reduced in onset position. Third, her statement of the conditions conducive to the selection of the epenthetic vowel suffers from descriptive imprecision. The phonological context needs to be constrained to refer only to the syllable immediately following the cluster in the etymon. Moreover, it should specify that the epenthetic vowel appears to be the [+high] vowel harmonizing in terms of the feature [back] with that (monophthong or second part of a diphthong) in the following syllable (see also Valdman 1986, p. 100).

3.3.4.5 Cameroonian

In his thesis on the creoles of Surinam, Smith (1987, pp. 228–230) also discusses the "realization of initial clusters consisting of /s/ plus a voiceless stop in English" in what he calls "Cameroonian". Consider first the Cameroonian forms illustrating the treatment of three-consonant clusters:

(178) /str/
trɔŋ (E *strong*) 'strong' (Smith 1987, p. 229)
/skr/
krás (E *scratch*) 'to scratch' (Smith 1987, p. 229)
/skw/
kwis (E *squeeze*) 'to squeeze' (Smith 1987, p. 229)
sikwía (E *square*) 'square' (Smith 1987, p. 229)

With one exception, then, three-consonant onset clusters are handled by /s/ deletion. As for *sikwía* this may well be a more recent word, given its lexical meaning. Note that *sikwía* figures among the lexical items regarded by Todd (1984, p. 102) as belonging to the second period of "lexical borrowing".

Consider next Cameroonian reflexes of two-consonant clusters consisting of /s/ and a voiceless stop (see also **Appendix 13**):

(179) /sp/
sipɔjl (E *spoil*) 'to spoil' (Smith 1987, p. 229)
/st/
sitá (E *star*) 'star' (Smith 1987, p. 229)
tán (E *stand*) 'to stand' (Smith 1987, p. 229)

/sk/
sikín (E *skin*) 'body' (Smith 1987, p. 229)

Two-consonant clusters, then, exhibit either /s/ deletion or vowel epenthesis. With two exceptions, all these clusters are simplified via vowel epenthesis, as with Schneider (1966). In all such cases the vowel inserted is [i], which makes it the default epenthetic vowel, again as with Schneider (1966), but *contra* Todd (1984).

Smith (1987, p. 230) concludes that "the /s/-dropping strategy might have been that originally adopted by WAPE [= West African Pidgin English", i.e. including in Cameroonian, "while the epenthetic vowel strategy might have been utilized [...] also in Cameroon". His conclusion regarding /s/ deletion as the earlier strategy in Cameroonian relies exclusively on phonological evidence from Krio (Smith 1987, p. 230). He thus overlooks the potential problem for such an account if the lexical meaning of items exhibiting /s/ deletion, which does not make them necessarily more basic and older, is also taken into account.

3.3.4.6 Instead of conclusions

Since different authors have investigated different varieties, and given the conflicting evidence, it is difficult to draw general conclusions with respect to the reflexes of /s/-initial onset clusters in what is generally called Cameroon Pidgin English. Two strategies, /s/ deletion and vowel epenthesis, coexist in some varieties to simplify or reduce both three- and two-consonant /s/-initial onset clusters, especially if /s/ is followed by a voiceless stop. Current forms exhibiting /s/ deletion may reflect an earlier strategy. The epenthetic vowel is [i] in most varieties. Vowel harmony is reported to occur in one variety.

3.3.5 Sranan

The most important development in modern Sranan, in comparison to the earlier stages of the language, is the effect of an ever-growing number of borrowings from Dutch (Menke 1986, pp. 51–52). One consequence of this influx of Dutch loanwords is noticeable in the reflexes of onset clusters made up of /s/ followed by a voiceless stop. Both three- and two-consonant clusters of this type are preserved as such in modern Sranan, as noticed by e.g. Holm (1988, p. 112, and 1989, p. 436). In other words, the constraint *ONS/sO is now undominated and outranks all the relevant faithfulness constraints. A reranking of constraints has thus taken place:

(180) initial ranking:
*ONS/sO, *ORALCODA, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR

current ranking:
*ORALCODA, DEP-IO, CONTIGUITY, MAX-IO, LEFT-ANCHOR >> *ONS/sO

I would like to stress the fact that the onset clusters made up of /s/ followed by a voiceless stop do *not* occur because "[t]he effects of the epenthesis strategy have been nullified in modern Sranan [...] by syncope", as claimed by Smith (1987, p. 231), "through the elision of earlier epenthetic vowels", as claimed by Holm (1988, 112). I have already shown in section **3.2.6** that in early Sranan these once illicit clusters, if simplified or reduced, undergo /s/ deletion exclusively.

Interestingly, another development in the onset clusters at issue goes in the opposite direction. It consists in the fact that they "may be broken up by an epenthetic /i/ in some speech style" (Sebba 1982, p. 25). The phenomenon has also been commented upon by Holm (1989, p. 443) who writes that "in certain cases Sranan words can be given "extra" vowels". Holm (1988, p. 443) further notes that "[t]he vowel insertion in emphatic speech, songs, ritual language and poetry in Sranan produces phonetically the comparable Ndjuka words". Vowel epenthesis affects even Dutch-derived words with a three-consonant onset cluster. Consider some examples:

(181) /str/
sitrei (D *strijd*) 'fight' (Sebba 1982, p. 26)
/sp/
sipiti (E *spit*) 'to spit' (Sebba 1982, p. 25)
/st/
sitón (E *stone*) 'stone' (Holm 1989, p. 443)
/sk/
sikóro (D *school*) 'school' (Holm 1988, p. 112)

In these speech styles the current constraint hierarchy in (180) undergoes reranking. The new hierarchy is:

(182) *ONS/sO, *ORALCODA, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

Given the reranking of constraints, a forms such as *sipiti* emerges as the winner:

(183)

/spɪt/	*ONS/sO	*ORALCODA	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
spi.ti	*!					
pi.ti			*!	*		
si.ti			*!			*
☞ si.pi.ti					*	*
is.pi.ti		*!		*	*	*

Note finally that violation of SON-SEQ is no longer conducive to syllable restructuring. In the ever growing number of onset clusters with /s/ followed by a voiceless stop the earlier value of ONSSON, n ≥1 (see **3.2.6**) no longer holds.

3.3.6 Antiguan

In his discussion of syllable structure Jeremiah (1976, p. 78) writes that modern Antiguan "may not have more than two initial consonants in a word". The CCCVC pattern is accordingly listed as not attested in the syllable structure of modern Antiguan (Jeremiah 1976, p. 78).

Jeremiah (1976, p. 70) states that in modern Antiguan "initial /s/ is deleted in words with consonant clusters". In reality, this is an incorrect generalization. As illustrated below, deletion of /s/ only takes place if the immediately following consonant is a voiceless stop. Consider the following examples:

(184) /str/
    'trong (E *strong*) 'strong' (Jeremiah 1976, p. 70)
    /sp/
    'peak (E *speak*) 'to speak' (Jeremiah 1976, p. 70)
    /st/
    'taring (E *staring*) 'staring' (Jeremiah 1976, p. 61)

The illicit three- and two-consonant clusters with /s/ followed by a voiceless stop are treated uniformly in that in both cases the strategy resorted to is /s/ deletion. This generalization can be captured by the constraint *ONS/sO. The constraint hierarchy is:

(185) *ONS/sO, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR

The following tableau shows the interaction of these five constraints:

(186)

/strɔŋ/	*ONS/sO	DEP-IO	CONTIG	MAX-IO	L-ANCHOR
strɔŋ	*!				
☞ trɔŋ				*	*
si.trɔŋ		*!	*		
is.trɔŋ		*!			*

On the other hand, the clusters made up of /s/ followed by a nasal stop in the corresponding etyma are broken up via vowel epenthesis:

(187) /sm/
    [samal] (E *small*) 'small' (Jeremiah 1976, p. 80, footnote 74)
    /sn/
    [sɪnɪək] (E *snake*) 'snake' (Jeremiah 1976, p. 80, footnote 74)

The data above indicate that clusters made up of /s/ and a nasal are prohibited, even though they do not violate SON-SEQ. The constraint *ONS/sN banning such clusters must be undominated. Given that /s/ is not deleted, MAX-IO and LEFT-ANCHOR are also undominated. As for the quality of the epenthetic vowel, Jeremiah (1976, p. 80) correctly notes that "the vowel segment which is inserted takes on the same feature of the [...] following vowel in the word". Surprisingly, Jeremiah (1976, p. 80) analyses this phenomenon as "a case of vowel harmony". In my opinion, it should be viewed as an instance of vowel copying. Therefore, it can be accounted for in terms of the constraint COPY. This constraint must be ranked above DEP-IO and CONTIGUITY. COPY eliminates candidates which, while epenthesizing, insert a vowel which is not a copy of the one occurring after the nasal stop. In its turn, LEFT-ANCHOR disallows output forms with a prothetic vowel. The constraint hierarchy in (188) accounts, as shown in (189), for the selection of e.g. [samal] as the optimal output:

(188)*ONS/sN, MAX-IO, LEFT-ANCHOR, COPY >> DEP-IO, CONTIGUITY

(189)

/smɔl/	*ONS/sN	MAX-IO	L-ANCHOR	COPY	DEP-IO	CONTIG
smal	*!					
mal		*!	*			
sal		*!				*
☞ sa.mal					*	*
si.mal				*!	*	*
as.mal			*!			

In its treatment of the clusters made up of /s/ plus a nasal stop, modern Antiguan differs from Jamaican (see **3.3.7**).

Finally, the clusters /sl/ and /sw/, although not exemplified in Jeremiah (1976), appear to be allowed in onset position. In terms of sonority, then, since /sm/ and /sn/ are disallowed whereas /sl/ and /sw/ are permitted, for clusters beginning with /s/ the value of the constraint ONSSON is n ≥ 3.

3.3.7 Jamaican

The analysis of the reflexes of /s/-initial onset clusters in modern Jamaican is based on data from Le Page and De Camp (1960), Cassidy (1961), Cassidy and Le Page (1967b), Johnson (1974), Akers (1981), Sutcliffe (1982), and Smith (1987).

All descriptions of the phonology of modern Jamaican basically agree with respect to the analysis of the reflexes of three- or two-consonant /s/-initial onset clusters. With respect to onset clusters with /s/ followed by a voiceless stop, Le Page and De Camp (1960, p. 137) observe that "[i]nitial /sp, st, sk/" are simplified "to /p, t, k/". In his turn, Cassidy (1961, p. 37) writes that "at the beginning of words *s* is lost before *p*, *t* or *k*". Next, Cassidy and Le Page (1967b, p. lxii) note that "[i]nitial /sk/ /skr/ /sp/ /spr/ /st/ /str/ are frequently reduced by loss of /s/". In his study of phonological variation in Jamaican Creole, Akers (1981, p. 31) also mentions the phenomenon of "initial consonant deletion", specifying that "[a]crolectal word-initial /s/ plus obstruent sequences may occur without /s/ in basilectal forms". Finally, the phenomenon is reported to occur even in British Jamaican. Thus, Sutcliffe (1982, p. 108) includes these clusters among the "[m]any combinations of consonants that [...] do not occur" in British Jamaican. Consider the examples below (and in **Appendix 14**):

(190) /spl/
plit (E *split*) 'to split' (Cassidy 1961, p. 37)
/spr/
[pred] (E *spread*) 'to spread' (Akers 1981, p. 31)
/str/
tri:t (E *street*) 'street' (Johnson 1974, p. 121)
/skr/
crape (E *scrape*) 'to scrape' (Cassidy 1961, p. 37)
/skw/
kwabz (E *squab*) 'partner' (Cassidy and Le Page 1967a, p. 267)
/sp/
paan, (E *span*) 'to take hold of, pick up' (Cassidy and Le Page 1967a, p. 343)
/st/
/taat/ (E *start*" 'to start' (Le Page and De Camp 1960, p. 168)
/sk/
catter-foot (E *scatter*, *foot*) 'to run away' (Cassidy 1961, p. 141)

The large number of examples shows that basilectal Jamaican still resorts to /s/ deletion in the resolution of these illicit onset clusters. The constraint hierarchy accounting for such reflexes of /s/-initial three- and two-consonant onset clusters is the same as in early Jamaican (**3.2.8**): *ONS/sO, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR.

Finally, as in its earlier stages (see **3.2.8**), Jamaican exhibits instances of hypercorrection involving /s/. Consider examples such as:

(191) /sprangs/ (E *prongs*) 'prongs' (Cassidy 1961, p. 46)
/sprikl/ (E *prickle*) 'to prickle' (Cassidy 1961, p. 46)
/stanjariin/ (E *tangerine*) 'tangerine' (Cassidy 1961, p. 46)
/skil/ (E *kiln*) 'kiln' (Cassidy 1961, p. 46)

Such examples show that speakers of basilectal Jamaican are aware of the difference between their variety and the acrolectal one. More importantly, they confirm indirectly that /s/ deletion continues to be, synchronically as well, a strategy for the resolution of illicit clusters in onset position.

Clusters made up of /s/ and a nasal stop are broken up by epenthesis. Le Page and De Camp (1960, p. 137) mention the occurrence of "a weakly articulated svarabhakti vowel". In his turn, Cassidy (1961, p. 38) states that "when the combination is *sm-* or *sn-* the *s* is not lost but a vowel is inserted to make it a separate syllable (never accented)". Finally, a more detailed analysis is provided by Akers (1981). According to Akers (1981, p. 28), "[i]nitial tautosyllabic /s/ plus nasal clusters do not occur in basilectal Creole" and a "syllable is produced [...] through application of vowel epenthesis".

Consider first the following reflexes of /sm/ (see also **Appendix 14**):

(192) /sm/

[su:ma:t] (E *smart*) 'smart' (Akers 1981, p. 28)
[su:mel] (E *smell*) 'smell' (Akers 1981, p. 28)
[su:mo:k] (E *smoke*) 'smoke' (Akers 1981, p. 28)
[si:mit] (E *smith*) 'smith' (Akers 1981, p. 28)

The quality of the epenthetic vowel appears to be conditioned by the phonological environment. The choice is limited to either [u:] or [i:]. Thus, "the epenthetic vowel may be [u:] only if the immediately following consonant is [labial], or if the vowel in the following syllable is [round]" (Akers 1981, p. 28). For reflexes of /sm/ in which the [LABIAL] nasal stop determines the quality of the epenthetic vowel I add the constraint V_{LAB}-N_{LAB}. The constraint hierarchy in (193) is demonstrated in tableau (194):

(193) *ONS/sm, MAX-IO, LEFT-ANCHOR, V_{LAB}-N_{LAB} >> DEP-IO, CONTIGUITY

(194)

/smɛl/	*ONS/sn	L-ANCHOR	MAX-IO	V_{LAB}-N_{LAB}	DEP-IO	CONTIG
smel	*!					
mel		*!	*			
sel			*!			*
☞ su:mel					*	*
si.mel				*!	*	*
is.mel		*!				

For those reflexes in which a [LABIAL] vowel determines the quality of the epenthetic vowel an extra constraint is needed, namely HARMONY. For the purposes of my analysis, this constraint is defined as follows:

(195) **HARMONY**: the epenthetic vowel and the vowel after the nasal stop agree in the feature [LABIAL].

This constraint ensures the elimination of a candidate which does epenthesize the wrong vowel, e.g. [si:mo:k] The relevant ranking, including this additional constraint, is:

(196) *ONS/sm, MAX-IO, LEFT-ANCHOR, HARMONY >> DEP-IO, CONTIGUITY

The interaction of these constraints is shown in the tableau below:

(197)

/sməʊk/	*ONS/sm	L-ANCHOR	MAX-IO	HARMONY	DEP-IO	CONTIG
su:mo:k	*!					
mo:k		*!	*			
so:k			*!			*
☞ su:mo:k					*	*
si:.mo:k				*!	*	*
is.mo:k		*!				

Consider next reflexes of /sn/ (see also **Appendix 14**):

(198) /sn/

[si:niek] (E *snake*) 'snake' (Akers 1981, p. 28)
sinórin (E *snoring*) 'snoring' (Cassidy 1961, p. 38)
[su:nuk] (E *snook*) 'snook; (Akers 1981, p. 28)

As can be seen, if /s/ is followed by /n/ in the etymon, the epenthetic vowel is [i:]. This is an instance of transcategorial assimilation of the V-to-C type, in which the [CORONAL] nasal /n/ respectively assimilates regressively the epenthetic vowel. This also shows that the same ranking as in early Jamaican Creole, given in (58), holds in the modern variety: *ONS/sn, LEFT-ANCHOR, MAX-IO, V_{COR}-N_{COR} >> DEP-IO, CONTIGUITY.

Note, however, that according to Akers (1981, p. 28) [i] may occur "even if the conditions for [u:] are satisfied". In other words, [i:] may be viewed as a default vowel since it may occur even instead of an expected [u:]. Two other remarks are in order here. First, the epenthetic vowels are long in Akers' analysis, not short as with Le Page and De Camp (1960) and Cassidy (1961). Second, modern Jamaican resembles Saramaccan and Ndyuka (see **3.2.9** and **3.2.10**) with its choice between two [+high] epenthetic vowels, depending on the environment.

Finally, the clusters /sl/ and /sw/ are, as in the earlier stages, permitted in modern Jamaican Creole. The value of ONSSON is, again as in early Jamaican Creole, n ≥2.

3.3.8 Gullah

With respect to Gullah, Turner (1969, p. 247) notes that "there is also the tendency to avoid certain consonant combinations either by inserting a vowel between the consonants or, more frequently, by dropping one of them". However, all the examples, not only in Turner (1969), but also in Hancock (1971) and Johnson (1974), illustrate /s/ deletion exclusively. These are always clusters in which /s/ is followed, in the etymon, by a voiceless stop. Consider the examples below:

(199) /spl/

plit (E *split*) 'to split' (Johnson 1974, p. 120)
/str/
trʌŋ (E *strong*) 'strong' (Turner 1969, p. 247)
/skw/
kβi:ʃ (E *squeeze*) 'to squeeze' (Johnson 1974, 120)
/sp/
pʌyl (E *spoil*) 'to spoil' (Hancock 1971, p. 119)
/st/
te (E *stay*) 'to stay' (Turner 1969, p. 247)

For both three- and two-consonant clusters containing /s/ followed by a voiceless stop, the ranking is:

(200) *ONS/sO, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR

Consider the evaluation below:

(201)

/split/	*ONS/sO	DEP-IO	CONTIG	MAX-IO	L-ANCHOR
split	*!				
☞ plit				*	*
si.plit		*!	*		
is.plit		*!			*

The clusters that do not violate SON-SEQ are all preserved, as shown in the following examples:

(202) /sm/

smɒl (E *small*) 'small' (Turner 1969, p. 266)

/sn/

snek (E *snake*) 'snake' (Turner 1969, p. 280)

/sl/

slip (E *sleep* 'sleep' (Turner 1969, p. 278)

/sw/

swit (E *sweet*) 'sweet' (Turner 1969, p. 280)

The decisive factor for the preservation of these clusters in modern Gullah is again the fact that SON-SEQ is not violated. The value of ONSSON is n ≥1.

3.4 Early Pacific English pidgins and creoles

3.4.1 Melanesian Pidgin English

Mühlhäusler (1997, p. 134) writes that "in a number of early texts in Melanesian varieties of PE, examples of cluster simplification by means of omission such as **tesen** 'station', **tima** 'steamer' [...] are widely found". In fact, there is considerable variation in the reflexes of /s/-initial onset clusters. Consider the examples listed below:

(203) /str/

1883 *esterrong* (E *strong*) 'strong' (Schuchardt 1883, p. 22)

/sp/

1883 *esseppoon* (E *spoon*) 'spoon' (Schuchardt 1883, p. 22)

1911 *sipia* (E *spear*) 'spear' (Churchill 1911, p. 50)

/st/

late 19th c. *tesen* (E *station*) 'station' (Mühlhäusler 1997, p. 134)

late 19th c. *tima* (E *steamer*) 'steamship' (Mühlhäusler 1997, p. 134)

/sm/

1902 *simoke* (E *smoke*) 'smoke' (Churchill 1911, 35)

/sl/

1875 *sileep* (E *sleep*) 'to sleep' (Churchill 1911, p. 49)

As can be seen, while /s/ deletion also occurs, the prevailing strategy seems to have been vowel epenthesis. Four remarks are in order here. First, that vowel epenthesis may have been the strategy most frequently resorted to is also suggested by its widespread use in the modern descendants of Melanesian Pidgin English, i.e. Tok Pisin, Bislama and Solomon Islands Pidgin, that is by "feed-back from current usage" (Rickford 1986, p. 162). Second, the form *esseppoon*, presumably [esepun], is a rare violation of the prediction that "[e]penthesis always applies *minimally* [...] precisely to the extent that is necessary to improve structural markedness" (Kager 1999, p. 105). Third, the epenthetic vowel seems to have been [i]. Fourth, vowel epenthesis breaks up /sm/ and /sl/ as well. Despite the absence of attestations of forms relevant to the fate of /sw/, I assume, on the basis of data from early Tok Pisin (see **3.4.2**) that vowel epenthesis also breaks up all /s/-initial clusters that do not violate SON-SEQ. The value of ONSSON is n= 4. Since all /s/-initial onset clusters are disallowed, this can be expressed by the constraint *ONS/sC. The constraint hierarchy is:

(204) *ONS/sC, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

Given this ranking, e.g. *silip* is selected as the optimal candidate:

(205)

/sli:p/	ONS/sC	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
slip	*!				
lip		*!	*		
sip		*!			*
☞ si.lip				*	*
is.lip			*!	*	

3.4.2 Tok Pisin

In his analysis of Tok Pisin, Hall (1943, p. 15) writes that "[t]here is a basic difference between English and Melanesian speakers in their pronunciation of [onset] clusters". In onset position, clusters starting with /s/ in the etymon "are pronounced by [Melanesian speakers] as consonant + unaccented vowel + consonant" (Hall 1943, pp. 15–16). He explicitly adds that "in a purely phonetic transcription, words containing such an unaccented vowel have to be considered as containing an extra syllable" (Hall 1943, p. 16, footnote 5). That is to say, all illicit consonant clusters in the onset are broken up by means of vocalic epenthesis. As for the nature of the epenthetic vowel, it "varies regionally" and it is either [ə] or [ɪ] (Hall 1943, p. 16). Coincidentally, there is another description of early Tok Pisin, dating from the same period, Murphy (1966)[31]. His very brief discussion of illicit consonant clusters in the onset (Murphy 1966, p. 3) includes comments on the treatment of clusters starting with /s/ in the corresponding etymon.

[31] First published in 1943, so it reflects the Tok Pisin of the 1940s.

Thus, "when the consonants appear in these pairs – SK, SL, SM, SN, SP, ST, SW [...], they are pronounced as if an unaccented "i" were between each pair of consonants" (Murphy 1966, p.3). The examples in my corpus confirm the strong tendency towards epenthesis, with most frequently [i] as the epenthetic vowel (see also **Appendix 15**):

(206) /str/
tiret (E *straight*) 'straight' (Mühlhäusler 1997, p. 165)
1943 *sitret* (E *straight*) 'correct' (Murphy 1966, p. 117)
/skr/
1943 *sikarap* (E *scrape*) 'to scratch, itch' (Murphy 1966, p. 93)
/sp/
1943 *sipana* (E *spanner*) 'spanner' (Murphy 1966, p. 93)
/st/
1943 [sɪ'tap] (E *stop*) 'be continually' (Hall 1943, p. 16)
/sm/
1943 *simel* (E *smell*) 'odour, smell; to stink' (Murphy 1943, p. 93)
/sn/
1943 *sinek* (E *snake*) 'snake' (Murphy 1966, p. 93)
/sl/
1943 *silip* (E *sleep*) 'to sleep' (Murphy 1966, p. 3)

The treatment of /s/-initial onset clusters in Tok Pisin can be captured by assuming a generalized constraint *ONS/sC, prohibiting any /s/-initial onset cluster. The constraint hierarchy which obtains is:

(207) *ONS/sC, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

This ranking is illustrated below by the evaluation of the form [sinek]:

(208)

/sneɪ k/	*ONS/sC	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
snek	*!				
nek		*!	*		
sek		*!			*
☞ si.nek				*	*
is.nek			*!	*	

Since even /sw/ may be reduced the value of ONSSON is n = 4.

3.4.3 Bislama

The examination of the earliest attestations of Bislama (Crowley 1990, 1993 and 1998, pp. 62–63) has yielded only reflexes of two-consonant /s/-initial onset clusters. Consider first clusters with /s/ followed by a voiceless stop (see also **Appendix 16**):

(209) /sp/
-1899 *soupoune* (E *spoon*) 'spoon' (Crowley 1998, p. 98)
/st/
-1899 *sitil* (E *steal*) 'to steal' (Crowley 1998, p. 98)
/sk/
-1899 *sikine* (E *skin*) 'skin, body' (Crowley 1998, p. 96)

The undominated constraint *ONS/sO imposes the reduction of such clusters. As for the quality of the epenthetic vowel, it is [u] if the vowel after the original cluster is /u/, elsewhere [i] (as in modern Bislama, see **3.5.2**). This can be captured by assuming the constraint COPY (as in modern Bislama, see **3.5.2**). The constraint hierarchy is:

(210) *ONSSON, MAX-IO, LEFT-ANCHOR, COPY >> DEP-IO, CONTIGUITY

This ranking secures the selection of e.g. *soupoune* [supun][32]:

(211)

/spu:n/	*ONS/sO	MAX-IO	L-ANCHOR	COPY	DEP-IO	CONTIG
spun	*!					
pun		*!	*			
sun		*!				*
☞ su.pun					*	*
si.pun				*!	*	*
is.pun			*!		*	

Onset clusters made up of /s/ and a nasal stop also undergo vowel epenthesis:

(212) /sm/

1893/1899 *sémèle* (E *smell*) 'smell' (Crowley 1998, p. 97)

This can be accounted for by the ranking in (213):

(213) *ONS/sN, MAX-IO, LEFT-ANCHOR, COPY >> DEP-IO, CONTOGUITY

Given this ranking, [semel] emerges as the best output:

(214)

/smɛl/	*ONS/sN	MAX-IO	L-ANCHOR	COPY	DEP-IO	CONTIG
smel.	*!					
mel		*!	*			
sel		*!				*
☞ se.mel					*	*
si.mel				*!	*	*
es.mel			*!		*	

In conclusion, vowel epenthesis reduces both clusters that violate SON-SEQ and one, /sm/, that does not. Thus, epenthesis also occurs if the value of ONSSON is n < 2.

The onset clusters /sl/ and /sw/ survive as such, as shown by the examples below:

(215) /sl/

-1899 *slip* (E *sleep*) 'to sleep' (Crowley 1998, p. 97)

/sw/

1914 *swit* (E *sweet*) 'sweet' (Crowley 1998, p. 99)

Epenthesis, then, does not occur if the value of ONSSON is n ≥2.

[32] The transcriber, a French missionary (Père Pionnier), uses French orthographic conventions.

3.4.4 Solomon Islands Pidgin

Jourdan and Keesing (1997, p. 409) note the "use of interconsonantal [...] vowels". Their examples consist exclusively of three- and two-consonant clusters with /s/ followed by a voiceless stop:

(216) /skr/
sikarapu (E *scrub*) 'bush' (Jourdan and Keesing 1997, p. 409)
/st/
sitoa (E *store*) 'store' (Jourdan and Keesing 1997, p. 409)
isitapu (Engl. *stop*) 'to stay' (Jourdan and Keesing 1997, p. 409)
/sk/
1916 *sekool* (E *school*) 'school' (Keesing 1988, p. 279)
sukulu (E *school*) 'school' (Jourdan and Keesing 1997, p. 409)

Note first the form *isitapu*, another rare violation of minimal epenthesis (Kager 1999, p. 105). Second, [i] (or, rarely, [e]) is the default epenthetic vowel. For most forms the ranking is therefore:

(217): *ONS/sO, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

Consider the evaluation for *sitoa*:

(218)

/stɔ:/	*ONS/sO	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
sto.a	*!				
to.a		*!	*		
so.a		*!			*
☞ si.to.a				*	*
is.to.a			*!	*	

Finally, as in Bislama (see **3.4.3** and **3.5.2**), [u] may occur if the vowel after the original cluster is /u/, as in *sukulu*. This means COPY plays a role too. The constraint hierarchy is:

(219) *ONS/sO, MAX-IO, LEFT-ANCHOR, COPY >> DEP-IO, CONTIGUITY

The constraint COPY ensures the elimination of e.g. [sikulu]:

(220)

/sku:l/	*ONS/sO	MAX-IO	L-ANCHOR	COPY	DEP-IO	CONTIG
sku.lu	*!					
ku.lu		*!	*			
su.lu		*!				*
☞ su.ku.lu					*	*
si.ku.lu				*!	*	*
is.ku.lu			*		*	*

The fate of the onset clusters that do not violate SON-SEQ cannot be inferred from the evidence at my disposal.

3.4.5 Kriol

Sandefur (1979, p. 46) identifies in early Kriol "clusters that were avoided by deleting one of the consonants" and "clusters that were avoided by insertion of a vowel between the consonants". Illicit consonant clusters include /s/-initial ones.

According to Sandefur (1979, p. 40), "in clusters involving three consonants at the beginning of a syllable, the first consonant was deleted":

(221) /str/
tařet (E *straight*) 'straight' (Sandefur 1979, p. 40)
/skr/
garœdjim (E *scratch*) 'to dig' (Sandefur 1979, p. 41)

Further, "in clusters involving two consonants at the beginning of a syllable, the first consonant was deleted if the second consonant was a stop" (Sandefur 1979, p. 39):

(222) /sp/
piya (E *spear*) 'spear' (Sandefur 1979, p. 39)
/st/
ton (E *stone*) 'stone' (Sandefur 1979, p. 39)

The fact that in both three- and two-consonant onset clusters with /s/ followed by a voiceless stop /s/ is deleted is expressed by the constraint hierarchy:

(223) *ONS/sO, DEP-IO, CONTIGUITY >> MAX-IO, LEFT-ANCHOR

This ranking ensures the selection of e.g. *piya*:

(224)

/spiə/	*ONS/sO	DEP-IO	CONTIG	MAX-IO	L-ANCHOR
spi.ya	*!				
☞ pi.ya				*	*
si.ya			*!	*	
si.pi.ya		*!	*		
is.pi.ya		*!			*

In conclusion, clusters violating SON-SEQ are reduced by /s/ deletion. On the other hand, "if the second consonant was a nasal, lateral, or semi-consonant, a vowel was inserted between the two consonants" (Sandefur 1979, p. 39):

(225) /sn/
sinek (E *snake*) 'snake' (Sandefur 1979, p. 47)
/sl/
silip (E *sleep*) 'to sleep' (Sandefur 1979, p. 39)

There is thus a split, in terms of the strategy used: /s/-initial onset clusters violating SON-SEQ versus those obeying it. The latter are illicit too and their resolution involves vowel epenthesis. The epenthetic vowel is always [i]. Since none of the clusters made up of /s/

and a [+sonorant] consonant is permitted, the value of ONSSON is n = 4, that is /s/ can only be followed by a vowel.

3.5 Modern Pacific English pidgins and creoles

3.5.1 Tok Pisin

The problem of consonant clusters historically beginning with /s/ in onset position is not discussed at all in Verhaar (1995). Similarly, Steinbauer (1998), and Barhorst and O'Dell-Barhorst (1999) and Schaefer (2001) only record forms that preserve these clusters in the onset. On the other hand, Mihalic (1957, p. xviii) writes that "many Melanesians have difficulty pronouncing groups of consonant sounds, especially at the beginning of words, as in *st*, *sp*, *sk*". He further adds that "in pronunciation, they often insert an extra vowel between consonants: thus *stap* 'be located' will often sound like *sitap* or *satap*" (Mihalic 1957, p. xviii). According to Mihalic (1957, p. xviii), the epenthetic vowel "is not constant, varying from *i* to *a* (and *e*) according to the region and the speaker". Dutton (1973, p. 36) mentions the fact that consonant clusters "are often pronounced with a very short, and sometimes quite distinct, vowel separating them", but he unfortunately does not specify which consonant clusters. More recently, Goulden (1990, p. 49) writes that "English consonant clusters in initial position are often broken up by an epenthetic vowel in Tok Pisin reflexes" but he also fails to specify the clusters at issue. Mühlhäusler (1999, p. 102) also states, witj no further details, that "[c]onsonant clusters are rare". Finally, Smith (2003, p. 48) notes that "there is considerable variation" and that "clusters may be separated by epenthetic vowels".

At any rate, three- and two-consonant clusters with /s/ followed by a voiceless stop are reduced through vowel epenthesis (see also **Appendix 17**):

(226) /skr/
sigirapim (E *scrape*) 'to rub' (Smith 2003, p. 79)
sukrú: (E *screw*) 'screw, joint' (Pawley 1975, p. 220)
/sp/
supia (E *spear*) 'spear' (Dutton 1973, p. 36)
sípun (E *spoon*) 'spoon' (Pawley 1975, p. 220)
/st/
síton (E *stone*) 'stone' (Pawley 1975, p. 220)
/sk/
síkin (E *skin*) 'skin, bark' (Laycock 1985, p. 303)

For forms with default epenthetic [i], the constraint hierarchy is:

(227) *ONS/sO, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

Consider how e.g. *sipun* is selected:

(228)

/spu:n/	*ONS/sO	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
spun	*!				
pun		*!	*		
sun		*!			*
☞ si.pun				*	*
is.pun			*!	*	*

A number of forms, e.g. *sukrú:*, exhibit epenthesis *cum* vowel copying. The selection of epenthetic [u] is enforced by COPY:

(229) *ONS/sO, MAX-IO, LEFT-ANCHOR, COPY >> DEP-IO, CONTIGUITY

The high ranking of COPY ensures the elimination of the candidate [sikru:]:

(230)

/skru:/	*ONS/sO	MAX-IO	L-ANCHOR	COPY	DEP-IO	CONTIG
skru:	*!					
kru:		*!	*			
sru:		*!				*
☞ su.kru:					*	*
si.kru:				*!	*	*
is.kru:			*!	*	*	*

The form *supia*[33] is exceptional. It appears to illustrate transcategorial assimilation of the V-to-C type, in which the epenthetic vowel assimilates to the following [LABIAL] consonant /p/:

(231) *ONS/sO, MAX-IO, LEFT-ANCHOR, V_{LAB}-C_{LAB} >> DEP-IO, CONTIGUITY

The ranking is demonstrated in the following evaluation:

(232)

/spiə/	*ONS/sO	MAX-IO	L-ANCHOR	V_{LAB}-C_{LAB}	DEP-IO	CONTIG
spi.a	*!					
pi.a		*!	*			
si.a		*!				*
☞ su.pi.a					*	*
si.pi.a				*!	*	*
is.pi.a			*!		*	*

Another onset cluster subject to epenthesis is that formed of /s/ and a nasal stop:

(233) /sm/
simok (E *smoke*) 'smoke' (Pawley 1975, p. 215)
/sn/
sinek (E *snake*) 'snake' (Smith 2003, p. 54)

This shows that *ONS/sN is undominated:

(234) *ONS/sN, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

A relevant evaluation is given in tableau (235):

[33] Dutton (1973, p. 36, footnote 1) writes that "in the Highlands this is pronounced clearly as supia".

(235)

/sməʊk/	*ONS/sN	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
smok	*!				
mok		*!	*		
sok		*!			*
☞ si.mok				*	*
is.mok			*!		

The fate of these onset clusters, which do not violate SON-SEQ, indicates that epenthesis also occurs if the value of ONSSON is n < 2.

Finally, as seen above, the forms analyzed exhibit some degree of variability of the epenthetic vowel. However, the epenthetic vowels differ from those listed by Mihalic (1957, p. xviii). The epenthetic vowel appears to be, in most cases, [i]. Indeed, [i] is often either the only possibility or, at least, one of the possible epenthetic vowels. The quality of the epenthetic vowel is discussed in some detail in Pawley (1975, pp. 223–225). Pawley does note the occasional occurrence of the phenomenon of vowel copying. However, he concedes that [i] is "the vowel most commonly heard in this context" (Pawley 1975, p. 225). Note also that the examples discussed also disprove Valdman's (1986, p.100) claim that epenthesis in Tok Pisin is captured by a "rule [which] needs to be constrained to refer only to the following syllable", i.e. by vowel copying.

3.5.2 Bislama

In his handbook, Guy (1974, p. 7) writes that "[i]n words starting with an **s** followed by one or two consonants, a vowel may be inserted between that **s** and the consonant which follow it", as illustrated by the examples below:

(236) /str/
sitrap (E *strap*) 'belt' (Guy 1974, p. 7)
/sp/
sipolem (E *spoil*) 'to damage' (Guy 1974, p. 7)
/sk/
sikel (E *scales*) 'scales' (Guy 1974, p. 7)
sikin (E *skin*) 'skin, bark, hide' (Guy 1974, p. 7)
sukul (E *school*) 'school' (Guy 1974, p. 7)

I have come across only one form illustrative of the fate of /sm/:

(237) /sm/
simol (E *small*) 'little' (Crowley 1990, p. 310)

As for the nature of the epenthetic vowel, Guy (1974, p. 7) notes that it "is a **u** whenever the next vowel is **u**; otherwise it is **i**". In other words, [i] has become the default epenthetic vowel. The ranking and the evaluation for a relevant form are shown in (238) and (239) respectively:

(238) *Ons/sO, Max-IO, Left-Anchor >> Dep-IO, Contiguity

(239)

/skɪn/	*Ons/sO	Max-IO	L-Anchor	Dep-IO	Contig
skin	*!				
kin		*!	*		
sin		*!			*
☞ si.kin				*	*
is.kin			*!	*	*

To account for cases of vowel copying, the addition of Copy is required, as in early Bislama (**3.4.3**). The constraint hierarchy is:

(240) *Ons/sO, NoCoda, Max-IO, Left-Anchor, Copy >> Dep-IO, Contiguity

This ranking ensures the emergence of *sukulu* as the optimal form:

(241)

/sku:l/	*Ons/sO	NoCoda	Max-IO	L-Anchor	Copy	Dep-IO	Contig
sku.lu	*!						
ku.lu			*!	*			
su.lu			*!				*
☞ su.ku.lu						*	*
si.ku.lu					*!	*	*
is.ku.lu		*!		*		*	*

3.5.3 Solomon Islands Pidgin

Jourdan and Keesing (1997, p. 413) state that in creolizing Solomon Islands Pidgin epenthetic vowels sometimes disappear, as seen in the following examples:

(242) /st/
stoa (E *school*) 'school' (Jourdan and Keesing 1997, p. 413)
/sk/
skul (E *school*) 'school' (Jourdan and Keesing 1997, p. 413)

In optimality-theoretic terms, this suggests that a reranking of constraints is in the making:

(243) current ranking:
*Ons/sO, Max-IO, Left-Anchor >> Dep-IO, Contiguity
reranking:
Max-IO, Left-Anchor, Dep-IO, Contiguity >> *Ons/sO

3.5.4 Kriol

In modern Kriol, "in syllables involving clusters of two consonants that were avoided [...], the interference pattern is simply reversed" (Sandefur 1979, p. 46). Consequently, "with clusters that were avoided by deleting one of the consonants, the consonant reappears" (Sandefur 1979, p. 46):

(244) /st/
ston (E *stone*) 'stone' (Sandefur 1979, p. 46)

On the other hand, "with clusters that were avoided by insertion of a vowel, the vowel is deleted" (Sandefur 1979, p. 46)

(245) /sl/

slip (E *sleep*) 'to sleep' (Sandefur 1979, p. 46)

In conclusion, this is another case of reranking of constraints. The current situation is expressed by the following constraint hierarchy:

(246) MAX-IO, LEFT-ANCHOR, DEP-IO, CONTIGUITY >> *ONS/sC

Consider the case of e.g. [slip] as the optimal output:

(247)

/sli:p/	MAX-IO	L-ANCHOR	DEP-IO	CONTIG	*ONS/sC
☞ slip					*
lip	*!	*			
sip	*!			*	
si.lip			*!	*	
is.lip			*!		

3.5.5 Nauru Pidgin English

In the only description to date of Nauru Pidgin English, Siegel (1990) does not discuss at all the issue of consonant clusters. The analysis here is based on all the examples and on the sample text in Siegel (1990).

Onset clusters with /s/ followed by a voiceless stop are broken up by vowel epenthesis:

(248) /st/

sɪtéi (E *stay*) 'to live' (Siegel 1990, p. 172)

sɪtóa (E *store*) 'store' (Siegel 1990, p. 182)

/sk/

sɪkúl (Siegel 1990, p. 182)

The constraint hierarchy is:

(249) *ONS/sO, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

Consider the evaluation for *stei*:

(250)

/stei/	*ONS/sO	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
stei	*!				
tei		*!	*		
sei		*!			*
☞ si.tei				*	*
is.tei			*!	*	*

In onset position clusters made up of /s/ and a nasal stop are also disallowed:

(251) /sm/

sumɔl (E *small*) 'small' (Siegel 1990, p. 181)

The epenthetic vowel is this time [u]. In light of examples such *sɪtóa* and *sɪkúl*, in which the epenthetic vowel is invariably [i], this is then another instance of transcategorial assimilation. The [LABIAL, +nasal] stop /m/ assimilates regressively the epenthetic vowel. The constraint responsible for the quality of the epenthetic vowel is V_{LAB}-N_{LAB}. The constraint hierarchy is:

(252) *ONS/sN, MAX-IO, LEFT-ANCHOR, V_{LAB}-N_{LAB} >> DEP-IO, CONTIGUITY

The ranking is demonstrated by the following evaluation:

(253)

/smɔl/	*ONS/sN	MAX-IO	L-ANCHOR	V_{LAB}-N_{LAB}	DEP-IO	CONTIG
smɔl	*!					
mɔl		*!	*			
sɔl		*!				*
☞ su.mɔl					*	*
si.mɔl				*!	*	*

Finally, the onset cluster /sl/ is also reduced through epenthesis:

(254) /sl/

sɪlíp (E *sleep*) 'to sleep' (Siegel 1990, p. 182)

The constraint *ONS/SL is therefore undominated. The ranking in (255) is confirmed by the evaluation in tableau (256):

(255) *ONS/SL, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

(256)

/sli:p/	ONSSL	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
sɪlíp	*!				
lip		*!	*		
sip		*!			*
☞ sɪ.lip				*	*
is.lip			*!	*	

On the evidence provided by the reflexes of the onset clusters /sm/ and /sl/, which do not violate SON-SEQ, but are nevertheless disallowed, I tentatively conclude that epenthesis occurs if the value of ONSSON is n < 3.

3.6 Conclusions

I have chosen to posit the constraint *ONS/sO for a number of reasons. First, simplified reflexes of three-consonant /s/-initial onset clusters could have been accounted for in terms of the constraint *ONS/CCC, prohibiting the occurrence of three-consonant clusters. However, this would have overlooked the fact that in the etyma such clusters always start with /s/ followed by a voiceless stop. Second, it would have missed a generalization, since two-consonant clusters with /s/ followed by a voiceless stop are also reduced. Alternatively, SON-SEQ could have been made use of when explaining the simplification or reduction of onset clusters with /s/ followed by a voiceless stop, as Plag (1999) does, who analyzes the situation in Sranan with reference to the constraint SSP [= sonority sequencing principle]. However, there are again a number of reasons for which I have chosen to formulate the constraint *ONS/sO. First, explicit reference is frequently made in the literature to obstruents (Akers 1981, p. 31) or to voiceless stops (Tinelli 1981, p. 168). Second, in the case of one English creole, Ndyuka, reference to a particular /s/ plus obstruent cluster, /sp/, has been shown to be necessary (**3.2.10**). Third, it is not the case that all /s/-initial onset clusters obeying SON-SEQ are allowed in all varieties considered. The reduction of such clusters has been accounted for in terms of language-specific values of the constraint ONSSON.

Three varieties disallow any /s/-initial onset cluster: Broad [Cameroon] Pidgin English (**3.3.4.2**), early Melanesian Pidgin English (**3.4.1**) and early Tok Pisin (**3.4.2**). The two main strategies used in the resolution of /s/-initial illicit onset clusters are /s/ deletion and vowel epenthesis. A difference can be noticed between the Atlantic pidgins and creoles and the Pacific ones. Deletion of /s/ is used in the former group, both in the early and in the modern varieties. Even the exceptions, e.g. earlier Ndyuka (**3.2.10**), resort to it, as an alternative strategy. As for the Pacific English pidgins and creoles considered, early Kriol (**3.4.5**), which deletes /s/, is the only exception, whereas all the other varieties considered resort to epenthesis.

In some Atlantic English varieties, the treatment of /s/ plus obstruent onset clusters depends on the number of consonants. Thus, in e.g. some varieties of Nigerian Pidgin English (**3.3.3**), three-consonant clusters are simplified through /s/ deletion, whereas two-consonant ones are reduced through vowel epenthesis.

In several varieties, /s/ deletion is restricted to /s/ plus obstruent onset clusters, while all clusters obeying SON-SEQ, as in early Kriol (**3.4.5**), or just those involving nasal stops, e.g. in early Jamaican (**3.2.8**), are reduced through epenthesis. Of the /s/-initial onset clusters which do not violate SON-SEQ /sw/ is usually preserved. On the other hand, /sw/ is occasionally simplified by deleting C_2, i.e. /w/, as e.g. in early Sranan (**3.2.6**). Also, this is the only cluster that may be reduced through the fusion of C_2 with the following vowel. The reduction of onset clusters made up of /s/ and a nasal stop involves a variety of processes, such as epenthesis with vowel copying, in modern Antiguan (**3.3.6**), with transcategorial assimilation or vowel harmony in modern Jamaican (**3.3.7**).

The most frequent epenthetic vowel is [i]. The occurrence of epenthetic [u] is due to transcategorial assimilation, in e.g. Saramaccan (**3.2.9**), to vowel harmony, in e.g. Kamtok (**3.3.4.4**) or vowel copying, in e.g. early Bislama.

Finally, several varieties have undergone or are undergoing constraint reranking, e.g. Saramaccan (**3.2.9**) and Solomon Islands Pidgin (**3.5.3**).

4

THE TREATMENT OF OBSTRUENT + SONORANT ONSET CLUSTERS

4.1 Introduction

The present chapter examines the reflexes in English pidgins and creoles of etyma with two-consonant onset clusters, to the exclusion of /s/-initial ones, analyzed in the preceding chapter. The clusters at issue are all of the obstruent + sonorant type: obstruent + glide and obstruent + liquid respectively. Both early and modern varieties are considered.

For reasons that will become clear hereafter, obstruent + glide onset clusters are only briefly discussed. The focus of this chapter is on the treatment of obstruent + liquid onset clusters in a selected number of English pidgins and creoles. Some of the languages at issue have been selected because the occurrence of obstruent + liquid onset clusters in their earlier stages is a matter of some dispute in the literature. This explains the fact that a disproportionately large part of this chapter is devoted to the creoles of Surinam. Others have been chosen because they disallow such clusters and are therefore illustrative of the strategies used for the resolution of the illicit clusters in question. Excluded are varieties that, by all accounts and on currently available evidence, permit obstruent + liquid clusters in onset position. One final remark is in order here. Throughout this chapter any constraint violations involving /s/ are disregarded, since they have been already analyzed in chapter **3**.

In **4.2** I first consider the early stages of three of the English creoles of Surinam: Sranan (in **4.2.2**), Saramaccan (**4.2.3**), and Aluku (**4.2.4**). In addition, I put forth hypotheses about two other English creoles from Surinam, Kwinti (**4.2.5**) and Ndyuka (**4.2.6**), whose earlier stages are not documented.

Section **4.3** looks at the reflexes of obstruent + liquid onset clusters in four modern English pidgins and creoles: Ghanaian Pidgin English (in **4.3.1**), Yoruba Nigerian Pidgin English (**4.3.2**), a variety of Cameroon Pidgin English (**4.3.3**), and Aluku (**4.3.4**).

Five early Pacific varieties are considered in **4.4**: Tok Pisin (in **4.4.2**), Bislama (**4.4.3**), Solomon Islands Pidgin (**4.4.4**), Torres Strait Creole (**4.4.5**), and Kriol (**4.4.6**).

The modern Pacific English pidgins and creoles examined in **4.5** are: Tok Pisin (in **4.5.1**), Bislama (**4.5.2**), Solomon Islands Pidgin (**4.5.3**), Torres Strait Creole (**4.5.4**), and Kriol (**4.5.5**).

The conclusions are presented in section **4.6**.

4.2 Early Atlantic English pidgins and creoles

4.2.1 Introduction

In this section I have little to say about the treatment of the obstruent + glide type. The body of empirical data at my disposal indicates that this type of clusters appears to have been permitted throughout the history of these languages. This is shown by the occurrence of this cluster even in varieties that disallow obstruent + liquid onset clusters.

Consider first examples from e.g. early Sranan and early Saramaccan respectively:

(1) 1735 *kweek* (D *kweken* 'to cultivate') 'cultivated' (van den Berg 2000[1], p. 88)
(2) 1778 *kwatriwóijo* (P *quatrolho*[2]) 'four-eyed opossum' (Ladhams 1999a, p. 238)

Consider next a modern variety such as Assimilated Cameroon Pidgin English. This pidgin has already been shown in **3.3.4.2** to have rather strict phonotactic constraints on /s/-initial onset clusters. Moreover, as will be shown in **4.3.3**, it also disallows obstruent + liquid clusters in onset position. However, it does permit obstruent + glide clusters in the onset, as can be seen from the example below:

(3) /kw/
kwikwik (E *quick*) 'quickly' (Schneider 1966, p. 219)

There is some inconsistency in the treatment in onset position of obstruent + glide clusters. Thus Saramaccan and Aluku[3], which in their contemporary varieties at least, disallow obstruent + liquid onset clusters, generally permit obstruent + glide clusters in this syllabic constituent. Consider the following examples from modern Aluku:

(4) /tw/
twalufu (D *twaalf*) 'twelve' (Hurault 1983, p.2)
(5) /kw/
kweli (E *square*) 'square' (Hurault 1983, p. 6)

Occasionally, the glide /w/ may undergo vocalization:

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[1] This is the version on the internet, since the printed one was not available to me.
[2] Smith (1987, p. 382) indicates P *quadriolho* as the etymon of the Saramaccan item.
[3] Also known as Boni. Following Bilby (1993), in this thesis I use the name Aluku.

(6) /kw/:

kuinčin (E *squeeze*) 'to squeeze' (Hurault 1983, p. 2)

In optimality-theoretic terms, this can be dealt with two constraints, *ONS/OG and *G$_{\text{VOCALIZATION}}$ respectively[4]. If *G$_{\text{VOCALIZATION}}$ outranks *ONS/OG, the obstruent + glide onset cluster is preserved. If *ONS/OG dominates *G$_{\text{VOCALIZATION}}$, the glide /w/ surfaces as [u]. In the latter case, the ranking is:

(7) *ONS/OG, MAX-IO, LEFT-ANCHOR, DEP-IO, CONTIGUITY >> *G$_{\text{VOCALIZATION}}$

The interplay of the constraints is demonstrated in the tableau below:

(8)

/squeeze/	*ONS/OG	MAX-IO	L-ANCHOR	DEP-IO	CONTIG	*G$_{\text{VOCAL}}$
kwin.čin	*!					
kin.čin		*!				
win.čin		*!	*			
ku.win.čin				*!	*	
☞ ku.in.čin						*

That examples such as *kuinčin* (E *squeeze*) 'to squeeze' are in modern Aluku the exception rather than the rule is also demonstrated by the occurrence of obstruent + glide onset clusters that are not found in the etymon. Consider the following example, where the obstruent + glide onset clusters obtains from syncope:

(9) *gwẽnti* (D *gewoonte* 'usage, use'[5]) 'to tame' (Hurault 1983, p. 2)

In light of the above, it can be concluded that in the Atlantic English pidgins and creoles obstruent + glide onset clusters are generally not subject to reduction. Expressed in optimality-theoretic terms, this means that *ONS/OG and *G$_{\text{VOCALIZATION}}$ are both ranked low in the hierarchy and are dominated by the relevant well-formedness constraints:

(10) MAX-IO, L-ANCHOR, DEP-IO, CONTIGUITY >> *ONS/OG, *G$_{\text{VOCALIZATION}}$

Currently available evidence indicates that this ranking has defined the phonology of Atlantic English pidgins and creoles throughout their history. This is quite unlike the situation of obstruent + liquid onset clusters, to which I now turn.

In what follows I investigate in detail the fate of obstruent + liquid onset clusters in the English creoles of Surinam. This is, as mentioned in **4.1**, a controversial issue in the literature. Basically, the controversy centres on whether the earlier varieties of these creoles allow obstruent + liquid onset clusters in onset position. Some creolists, e.g. Voorhoeve (1961, p. 103), Alleyne (1980, pp. 45–46), Smith

[4] For their definitions, see (98) and (99) in section **3.2.9**.

[5] Throughout this chapter Dutch etyma are established on the basis of ten Bruggencate (1978).

(1987), posit the existence of epenthesized clusters in the earlier stages of the English creoles of Surinam. Smith (1987, p. 346), for example, claims that "[t]he most natural explanation of the patterns:

English	Sranan	Saramaccan	Ndyuka	Boni
CLV́..	CrV́..	CVV́..	CVV́..	CVV́..

[...] is to assume that the original Proto-Sranan pattern involved epenthesized clusters". According to him, "[t]o assume [...] that the original pattern involved non-epenthesized clusters reduces the great similarity of the Eastern and Western Bush Negro languages to coincidence" (Smith 1987, p. 346). On the other hand, Sebba (1982) and Aceto (1996) claim that unepenthesized obstruent + liquid onset clusters were initially permitted. Addressing once again[6] the issue of the occurrence or not of obstruent + liquid onset clusters in the earlier stages of the English creoles of Surinam is therefore not devoid of interest. In the remaining part of section **4.2** I undertake a qualitative and quantitative analysis of a large body of empirical data that are relevant to the early history of these clusters in Sranan, Saramaccan, Aluku, Kwinti and Ndyuka. As far as the first three creoles are concerned, I analyze, in chronological order, a large corpus of early records, including material that has only recently become available. Due attention is paid to the principles and issues involved in the phonological interpretation of early records of English creoles, discussed by, among others, Hancock (1977), Rickford (1986 and 1991), and Avram (2000c). Words with unknown etymology have not been taken into consideration. One final remark is in order here. The following abbreviations are used throughout this section: D= Dutch; E= English; E/D= English or Dutch; P= Portuguese.

4.2.2 Early Sranan (1707–1798)

In this section I examine the earliest records of Sranan, from 1707 until the end of the 18th century. The examples of early Sranan are from Schuchardt (1914 / 1980), Smith (1987), from the texts edited and analyzed by Arends and Perl (1995), from Bruyn (1995), and from the court records in van den Berg (2000). One remark is in order here. Although the examples from van den Berg (2000) cover (with a small number of exceptions) the period from 1707 to 1767, they are treated in what follows as one group, to avoid an unnecessary multiplication of sections. Since most of the

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[6] This is a completely revised and much expanded version of Avram (in press c).

relevant forms date from 1723 to 1763, the list is placed after Herlein (1718) and before van Dyk (ca. 1765).

4.2.2.1 Herlein (1718)

Included here are reflexes of obstruent + liquid onset clusters in the so-called "Herlein fragment" and in other forms recorded by the author (see also **Appendix 2**):

(11) /pl/
1718 *plasje* (E *place*) 'place' (Arends and Perl 1995, p. 74)

(12) /br/
1718 *kabritjes* (P *cabrita*) 'female kid' (Schuchardt 1914/1980, p. 109)

(13) /tr/
1718 *trou* (E *true*) 'true' (Arends and Perl 1995, p. 74)

(14) /dr/
1718 *draei* (E *dry*) 'thirsty' (Arends and Perl 1995, p. 73)

(15) /kl/
1718 *klosse by* (E *close by*) 'close to' (Arends and Perl 1995, p. 74)

(16) /gr/
1718 *grande* (P *grande*) 'big' (Arends and Perl 1995, p. 73)

Significantly, the text also includes two items exhibiting an obstruent + liquid onset cluster which does not occur in the respective etyma:

(17) /tr/
1718 *mastre* (E *master*) 'master' (Arends and Perl 1995, p. 74)
1718 *watre* (E/D *water*) 'master' (Arends and Perl 1995, p. 74)

Recall from chapter **3** that the creoles of Surinam do not permit [-nasal] codas. Therefore, such clusters can only be syllabified in the onset.

There are thus 11 forms, representing 9 words, that display unepenthesized reflexes of various obstruent + liquid onset clusters:

(18)

Reflexes of	Number of forms	Number of words	Source language
/pl/	4	2	2 E
/br/	1	1	P
/tr/	1	1	E
/dr/	3	3	2 E, 1 D
/kl/	1	1	E
/gr/	1	1	P

More significant than sheer numbers is the fact that all etyma with obstruent + liquid onset clusters have reflexes retaining the cluster. In other words, the retention rate of obstruent + liquid onset clusters in Herlein (1718) is 100 %.

Equally significant is the fact that obstruent + liquid onset clusters also occur in reflexes of etyma without such clusters:

(19)

New cluster	Number of forms	Number of words	Source language
/tr/	2	2	E

4.2.2.2 Court records (1707–1777)

Relevant forms from early Sranan are also found in van den Berg's (2000) analysis of 18th century court records. The examples below are from the appendices "Early Sranan sentences" (pp. 79–83), and "Presentation of words" (pp. 85–106).

A number of unepenthesized reflexes of obstruent + liquid onset clusters occur in the corpus examined (see also **Appendix 3**):

(20) /pl/
1745 *ple* (E *place*) 'place' (van den Berg 2000, p. 92)
(21) /br/
1761 *brooki* (E *broke*) 'to break' (van den Berg 2000, p. 81)
(22) /fr/
1759 *fransen* (D *Frans*) 'French' (van den Berg 2000, p. 97)
(23) /tr/
1745 *contreman* (E *countryman*) 'countryman' (van den Berg 2000, p. 90)
(24) /dr/
1707 *dram* (E *dram*) 'strong liquor' (van den Berg 2000, p. 85)
(25) /kl/
1732 *cloosie* (E *clothes*) 'clothes; cloth' (van den Berg 2000, p. 87)
(26) /kr/
1743 *krabbe* (E *crab*) 'crab' (van den Berg 2000, p. 90)
(27) /gl/
1745 *ogerii* (E *ugly*) 'evil' (van den Berg 2000, p. 92)
1761 *okri* (E *ugly*) 'harm' (van den Berg 2000, p. 81)
(28) /gr/
1711 *mangro* (E *mangrove*) 'mangrove' (van den Berg 2000, p. 86)

As shown in table (29), there are 46 forms (20 words) that contain reflexes of obstruent + liquid onset clusters in the etyma.

(29)

Reflexes of	Number of forms	Number of words	Source language
/pl/	1	1	E
/br/	1	1	E
/fr/	1	1	D
/tr/	10	5	4 E, 1 D
/dr/	12	2	E
/kl/	3	2	E
/kr/	8	3	E
/gl/	2	1	E
/gr/	8	4	1 E, 1 E + P, 2 P

The retention rate of obstruent + liquid onset clusters is quite impressive: 97.83 % of all forms, and 95 % of all words. There is only one exception, a word etymologically derived from E *ugly*, which evinces an epenthesized cluster: *ogerii*. Note, however that even this lexical item also has an unepenthesized variant, *okri*.

Consider next instances of new obstruent + liquid onset clusters:

(30) /tr/
1745 *tron* (E *turn*) 'to turn' (van den Berg 2000, p. 79)
(31) /kr/
1757 *bakra* (Efik/Ibibio *mbakara*[7]) 'White' (van den Berg 2000, p. 80)
(32) /gr/
1757 *negre* (D *neger*) 'Negro' (van den Berg 2000, p. 80)

A total of 11 forms, representing 6 different words, evince such clusters:

(33)

New cluster	Number of forms	Number of words	Source language
/tr/	1	1	E
/kr	5	3	1 E, 1 D, 1 Efik
/gr/	5	2	1 E + D, 1 D

4.2.2.3 van Dyk (ca. 1765)

This text is important from at least two points of view. First, it is of a significant length. Second, unlike Herlein (1718), said by some linguists to reflect a less basilectal Sranan, van Dyk's text is unanimously considered to be more illustrative of early plantation Sranan, i.e. of a "conservative" variety (see e.g. Plag and Uffmann 2000, p. 322). Evidence from this text is therefore more significant.

Van Dyk's text is replete with reflexes of etyma containing obstruent + liquid onset clusters. Consider the examples listed below (and in **Appendix 4**):

(34) /pl/
-1765- *plessi* (E *place*) 'place' (Arends and Perl 1995, p. 123)
(35) /pr/
-1765- *proddi* (E *proud*) 'proud' (Arends and Perl 1995, p. 121)
(36) /bl/
-1765- *blake* (E *blake*) 'black' (Arends and Perl 1995, p. 175)
(37) /br/
-1765- *bradden* (E *broad*) 'wide' (Arends and Perl 1995, p. 96)
(38) /fl/
-1765- *flauw* (D *flauw*) 'to faint' (Arends and Perl 1995, p. 169)
(39) /fr/
-1765- *fransi* (D *Frans*) 'French' (Arends and Perl 1995, p. 129)
(40) /θr/
-1765- *troy* (E *throw away*) 'to throw' (Arends and Perl 1995, p. 237)
(41) /tr/
-1765- *kondere* (E *country*) 'country' (Arends and Perl 1995, p. 130)
-1765- *konderi* (E *country*) 'country' (Arends and Perl 1995, p. 115)

[7] According to Allsopp (1996, p. 61) and to Aceto (1999, p. 74).

(42) /dr/
-1765- *drey* (E *dry*) 'thirsty' (Arends and Perl 1995, p. 233)
(43) /kl/
-1765- *klare* (D *klaar*) 'ready' (Arends and Perl 1995, p. 233)
(44) /kr/
-1765- *krassi* (E *cross*) 'angry' (Arends and Perl 1995, p. 120)
(45) /gl/
-1765- *glasi* (E *glass* / D *glas*) 'glass' (Arends and Perl 1995, p. 113)
-1765- *ogeri* (E *ugly*) 'angry' (Arends and Perl 1995, p. 119)
(46) /gr/
-1765- *graft* (D *graft*) 'canal' (Arends and Perl 1995, p. 104)
-1765- *hangere* (E *hungry*) 'hunger' (Arends and Perl 1995, p. 156)
-1765- *hangerie* (E *hungry*) 'hunger' (Arends and Perl 1995, p. 157)
-1765- *hangeri* (E *hungry*) 'hungry' (Arends and Perl 1995, p. 132)

To sum up, 83 forms, corresponding to 49 words, are reflexes of etyma with obstruent + liquid onset clusters. The results are set out in table (47):

(47)

Reflexes of	Number of forms	Number of words	Source language
/pl/	10	5	3 E, 2 D
/pr/	2	2	1 E, 1 E
/bl/	6	4	2 E, 2 D
/br/	15	8	5 E, 3 D
/fl/	1	1	D
/fr/	6	2	1 E, 1 D
/θr/	1	1	E
/tr/	9	6	4 E, 2 D
/dr/	5	3	2 E, 1 D
/kl/	7	4	3 E, 1 D
/kr/	11	6	3 E, 3 D
/gl/	2	2	1 E, 1 D
/gr/	8	5	2 E, 2 D, 1 P

The retention rate of obstruent + liquid onset clusters amounts to 92.77 % of all forms, and to 93.83 % of all words respectively. There are also a few exceptions, i.e. forms displaying epenthesized obstruent + liquid onset clusters. These are: *kondere* or *konderi*, *hangere*, *hangeri* or *hangerie*, and *ogeri*.

Cases of obstruent + liquid onset clusters not existing in the etyma are also found:

(48) /bl/
-1765- *blibi* (E *believe*) 'to believe' (Arends and Perl 1995, p. 130)
(49) /br/
-1765- *bron* (E *burn*) 'to burn' (Arends and Perl 1995, p. 161)
(50) /tr/
-1765- *trawan*[8](E *tother*, *one*) 'someone else' (Arends and Perl 1995, p. 97)

[8] Obtaining presumably from *tother*, realized phonetically with a flap [tařa], and syncope.

(51) /kr/
-1765- *kroete*[9](E *court*) 'quarrel' (Arends and Perl 1995, p. 151)

The breakdown for the 16 new clusters in reflexes of 11 etyma is set out below:

(52)

New cluster	Number of forms	Number of words	Source language
/bl/	1	1	E
/br/	1	1	E
/tr/	10	6	E
/kr/	4	3	E

4.2.2.4 Fermin (1765)

Further instances of unepenthesized reflexes of etyma with obstruent + liquid onset clusters are found in samples of early Sranan in Fermin (1765), apud Smith (1987):

(53) /pl/
1765 *pleisi* (E *place*) 'place' (Smith 1987, p. 365)
1765 *plesi* (E *place*) 'place' (Smith 1987, p. 365)
(54) /bl/
1765 *blaka* (E *black*) 'black' (Smith 1987, p. 345)
(55) /tr/
1765 *troe* (E *true*) 'true' (Smith 1987, p. 368)
(56) /kr/
1765 *cras-* (E *scratch*) 'to scratch' (Smith 1987, p. 368)

Four types of obstruent + liquid onset clusters occur in 5 forms of 4 words:

(57)

Reflexes of	Number of forms	Number of words	Source language
/pl/	2	1	E
/bl/	1	1	E
/tr/	1	1	E
/kr/	1	1	E

4.2.2.5 Nepveu (1770)

The next textual evidence is from Nepveu (1770), a "progressive" variety (Plag and Uffmann 2000, p. 322). Consider first reflexes of obstruent + liquid onset clusters (see also **Appendix 5**):

(58) /pl/
1770 *pleij* (E *play*) 'play' (Arends and Perl 1995, p. 84)
(59) /fl/
1770 *fleij* (E *fly*) 'fly' (Arends and Perl 1995, p. 86)

[9] In accordance with Dutch orthographic conventions, [u] is sometimes rendered by the digraph *oe*.

(60) /tr/
 1770 *troe* (E *true*) 'true' (Arends and Perl 1995, p. 78)
(61) /dr/
 1770 *drei* (E *dry*) 'dry' (Arends and Perl 1995, p. 89)
(62) /gl/
 1770 *ogri* (E *ugly*) 'evil' (Arends and Perl 1995, p. 89)
(63) /gr/
 1770 *gran* (P *grão*) 'important' (Arends and Perl 1995, p. 81)

In Nepveu (1770) all obstruent + liquid onset clusters are preserved in the 16 relevant forms corresponding to 15 lexical items. The retention rate of obstruent + liquid onset clusters is therefore 100 %. Note, incidentally, the form *ogri*, one of the 3 words displaying an epenthesized obstruent + liquid onset cluster in van Dyk (see **4.2.2.3**). Table (64) shows the breakdown per type of cluster and source language of the words:

(64)

Reflexes of	Number of forms	Number of words	Source language
/pl/	4	3	E
/fl/	1	1	E
/tr/	1	1	E
/dr/	6	4	3 E, 1 D
/gl/	1	1	E
/gr/	3	3	1 E, 2 P

A number of new obstruent + liquid onset clusters are also attested (see also **Appendix 5**):

(65) /br/
 1770 *nembre*[10](E *never*) 'never' (Arends and Perl 1995, p. 81)
 1770 *tembreman* [11](D *timmerman*) 'carpenter' (Arends and Perl 1995, p. 90)
(66) /tr/
 1770 *datra* (E *doctor*) 'doctor' (Arends and Perl 1995, p. 88)
(67) /dr/
 1770 *ondro* (D *onder*) 'under' (Arends and Perl 1995, p. 82)
(68) /gl/
 1770 *nangla*[12] (D *nagel*) 'nail' (Arends and Perl 1995, p. 86)
(69) /gr/
 1770 *ningre* (D *neger*) 'Negro' (Arends and Perl 1995, p. 84)

A total of 11 forms, representing 10 words, exhibit such clusters:

[10] Where /b/ is the reflex of E /v/. It is not clear what the *m* stands for. It may indicate nasalization of the vowel /e/ via progressive assimilation of nasality.
[11] The insertion of the homogarnic stop /b/ leads to the formation of the onset cluster [br-].
[12] For the "intrusive" /n/, cf. e.g. the modern Aluku equivalent *nãnga* 'nail' (Hurault 1983, p. 23).

(70)

New cluster	Number of forms	Number of words	Source language
/br/	5	4	3 E, 1 D
/tr/	3	3	2 E, 1 D
/dr/	1	1	D
/gl/	1	1	D
/gr/	1	1	D

4.2.2.6 Stedman (1777)

The samples of early Sranan from Stedman (1777) quoted in Smith (1987) also include several instances of reflexes of etyma with obstruent + liquid onset clusters:

(71) /pl/
1777 *play* (E *play*) 'to play' (Smith 1987, p. 365)
(72) /bl/
1777 *bresse* (E *bless*) 'to bless' (Smith 1987, p. 365)
(73) /br/
1777 *braf* (E *broth*) 'broth' (Smith 1987, p. 367)
(74) /tr/
1777 *condre* (E *country*) 'country' (Smith 1987, p. 381)
1777 *-tree* (E *tree*) 'tree' (Smith 1987, p. 367)
1777 *tringee* (E *string*) 'string' (Smith 1987, p. 367)
(75) /dr/
1777 *dressy* (E *dress*) 'medicine' (Smith 1987, p. 368)
(76) /kr/
1777 *crassy* (E *scratch*) 'to scratch' (Smith 1987, p. 368)
(77) /gr/
1777 *sangaree* (E *shangree*) 'shangree' (Smith 1987, p. 381)

Summing up, out of a total of 9 forms, corresponding to 9 words, 8 exhibit obstruent + liquid onset clusters, as set out in the following table:

(78)

Reflexes of	Number of forms	Number of words	Source language
/pl/	1	1	E
/bl/	1	1	E
/br/	1	1	E
/tr/	3	3	E
/dr/	1	1	E
/kr/	1	1	E

In the corpus, just one word, *sangaree*, evinces vowel epenthesis. Note also the form *condre*, without epenthesis, unlike van Dyk's variants.

4.2.2.7 Schumann (1781)

Schumann's (1781) translation of the Gospels into Sranan is one of the major sources for our knowledge about earlier stages of the language. Unfortunately, I did not have access to the text, so I present evidence (see also **Appendix 6**) from the numerous and extensive quotes from Schumann (1781) in Bruyn (1995).

Consider first reflexes of obstruent + liquid clusters:

(79) /pl/
1781 *plesi* (E *place*) 'place' (Bruyn 1995, p. 71)

(80) /pr/
1781 *pramissi* (E *promise*) 'to promise' (Bruyn 1995, p. 164)
(81) /bl/
1781 *blindesomma* (E *blind, some*) 'blind' (Bruyn 1995, p. 189)
(82) /br/
1781 *brara* (E *brother*) 'brother' (Bruyn 1995, p. 188)
(83) /θr/
1781 *trueh* (E *throw away*) 'to throw' (Bruyn 1995, p. 246)
(84) /tr/
1781 *kondre* (E *country*) 'country' (Bruyn 1987, p. 164)
(85) /kl/
1781 *klossi* (E *clothes*) 'shroud' (Bruyn 1995, p. 163)
(86) /kr/
1781 *kribbe* (E *crib*) 'crib' (Bruyn 1995, p. 164)
(87) /gl/
1781 *ougri* (E *ugly*) 'bad' (Bruyn 1995, p. 82)
(88) /gr/
1781 *grang* (P *grão*) 'great' (Bruyn 1995, p. 106)

Even in the limited number of samples from Schumann (1781) at my disposal, no fewer than 9 types of unepenthesized obstruent + liquid onset clusters (corresponding to 10 clusters in the etyma) are represented by the 16 forms (16 words):

(89)

Reflexes of	Number of forms	Number of words	Source language
/pl/	1	1	E
/pr/	1	1	E
/bl/	2	2	1 E, 1 D
/br/	3	3	2 E, 1 D
/θr/	1	1	E
/tr/	3	3	E
/kl/	2	2	E
/kr/	1	1	E
/gl/	1	1	E
/gr/	1	1	P

Notice also that the items include *kondre* and *ougri*, 2 of the 3 words with an epenthetic vowel in van Dyk.

New obstruent + liquid onset clusters in Schumann (1781) include the following (see also **Appendix 6**):

(90) /br/
1781 *bribi* (E *belief*) 'belief' (Bruyn 1995, p. 57)
(91) /fr/
1781 *tafra* (D *tafel*) 'table' (Bruyn 1995, p. 90)
(92) /tr/
1781 *watra* (E *water*, D *water*) 'water' (Bruyn 1995, p. 190)
(93) /dr/
1781 *middri* (E *middle*, D *middel*) 'middle' (Bruyn 1995, p. 99)

The types of new obstruent + liquid onset clusters and the source language of the words are shown in table (94):

(94)

New cluster	Number of forms	Number of words	Source language
/br/	2	2	E
/fr/	1	1	D
/tr/	1	1	E
/dr/	2	2	D

4.2.2.8 Schumann (1783)

Smith (1987) and the various quotations in Bruyn (1995), and van den Berg (2000) have provided me with a significant number of relevant forms.

Listed below (and in **Appendix 7**) are first reflexes of etyma with obstruent + liquid onset clusters:

(95) /pl/
1783 *plesi* (E *place*) 'place' (Smith 1987, p. 365)
(96) /pr/
1783 *prodo* (E *proud*) 'proud' (Smith 1987, p. 370)
(97) /bl/
1783 *blakka* (E *black*) 'black' (Smith 1987, p. 345)
(98) /br/
1783 *blaffo* (E *broth*) 'broth' (Smith 1987, p. 367)
(99) /fl/
1783 *flei* (E *fly*) 'to fly' (Smith 1987, p. 365)
(100) /tr/
1783 *kondre* (E *country*) 'country' (Smith 1987, p. 381)
(101) /dr/
1783 *drai* (D *draaien*) 'to turn' (Bruyn 1995, p. 181)
(102) /kl/
1783 *klossi-* (E *close*) 'close' (Smith 1987, p. 365)
(103) /kr/
1783 *krabbu* (E *crab*) 'crab' (van den Berg 2000, p. 90)
(104) /gl/
1783 *ougri* (E *ugly*) 'evil; bad' (Smith 1987, p. 345)

(105) /gr/
    1783 *hangri* (E *hungry*) 'hunger' (Smith 1987, p. 381)

The results of this investigation can be summarized as follows. There are 43 forms, corresponding to 33 lexical items, that are reflexes of etyma with obstruent + liquid onset clusters. 11 types of unepenthesized obstruent + liquid clusters are found in the Sranan reflexes, as shown in table (106).

(106)

Reflexes of	Number of forms	Number of words	Source language
/pl/	6	4	E
/pr/	1	1	E
/bl/	6	4	3 E, 1 D
/br/	4	4	E
/fl/	6	4	3 E, 1 D
/tr/	5	5	E
/dr/	3	3	2 E, 1 D
/kl/	7	3	E
/kr/	1	1	E
gl/	1	1	E
/gr/	8	8	6 E, P 2

One last remark is in order here. The reflexes with unepenthesized obstruent + liquid clusters include all 3 words that displayed an epenthetic vowel in van Dyk. Compare Schumann's (1783) *kondre*, *ougri*, and *hangri* to van Dyk's *kondere*, *konderi*, *ogeri* and *hangere*, *hangeri* and *hangerie* respectively.

I have only identified several instances of new obstruent + liquid onset clusters:

(107) /pl/
    1783 *piple* (E *people*) 'people' (Smith 1987, p. 379)
(108) /br/
    1783 *abra* (E *over*) 'over' (Smith 1987, p. 345)
(109) /tr/
    1783 *tron* (E *turn*) 'to turn' (van den Berg 2000, p. 93)
(110) /dr/
    1783 *gendri* (E *gentle*) 'rich' (Smith 1987, p. 379)
(111) /kr/
    1783 *bakkra* (Efik *mbakara*) 'European' (van den Berg 2000, p. 104)
(112) /gl/
    1783 *single* (E *shingle*) 'shingle' (Smith 1987, p. 379)
(113) /gr/
    1783 *ningre* (D *neger*) 'slave' (Bruyn 1995, p. 161)

The findings are summarized below:

(114)

New cluster	Number of forms	Number of words	Source language
/pl/	2	21	1 E, 1 P
/br/	1	1	E
/tr/	1	1	E
/dr/	3	2	E
/kr/	4	3	1 E, 1 D, 1 Efik
/gl/	1	1	E
/gr/	2	2	1 E, 1 D

4.2.2.9 Schouten (1786)

Schouten's (1786) text, published in Voorhoeve and Lichtveld (eds.), is a poem containing lines alternately in Dutch and Sranan. The lines in Sranan contain obstruent + liquid onset clusters that, as noted by Sebba (1982, p. 27) "scan perfectly when they are pronounced as clusters, without an epenthetic vowel". In other words, there is indirect phonological evidence that the clusters at issue are not merely "orthographic" ones.

The unepenthesized reflexes of etyma with obstruent + liquid onset clusters are:

(115) /br/
brokke (E *broke*) 'to break' (Voorhoeve and Lichtveld 1975, p. 287)

(116) /fr/
fredde (E *afraid*) 'afraid' (Voorhoeve and Lichtveld 1975, p. 286)

(117) /tr/
trou (E *true*) 'true' (Voorhoeve and Lichtveld 1975, p. 286)

(118) /gl/
ogrie (E *ugly*) 'ugly' (Voorhoeve and Lichtveld 1975, p. 286)

These 4 forms (representing 4 words) are the only ones that could have been broken up by vowel epenthesis. The retention rate of obstruent + liquid onset clusters is 100 %. Note that Schouten has *ogrie*, with no epenthetic vowel, for van Dyk's *ogeri*.

There is, in addition, one instance of an obstruent + liquid onset cluster not existing in the corresponding etymon:

(119) /br/
diebrie (E *devil*) 'devil' (Voorhoeve and Lichtveld 1975, p. 286)

The results are set out in tables (120) and (121) respectively:

(120)

Reflexes of	Number of forms	Number of words	Source language
/br/	1	1	1 E
/fr/	1	1	1 E
/tr/	1	1	1 E
/gr/	1	1	1 E

(121)

New cluster	Number of forms	Number of words	Source language
/br/	1	1	1 E

4.2.2.10 Weygandt (1798)

Weygandt (1798) is the last 18th century source referred to in this section on early Sranan. Again, I have resorted to Smith (1987) and Bruyn (1995) since Weygandt's dictionary was not available to me.

I have identified a rather large number of instances of unepenthesized reflexes of obstruent + liquid onset clusters (see also **Appendix 8**):

(122) /pl/
1798 *planasie* (D *plantage*) 'plantation' (Bruyn 1995, p. 182)
(123) /pr/
1798 *prodo* (E *proud*) 'proud' (Smith 1987, p. 370)
(124) /bl/
1798 *blaka* (E *black*) 'black' (Smith 1987, p. 345)
(125) /br/
1798 *brada* (E *broad*) 'wide' (Smith 1987, p. 370)
(126) /fl/
1798 *fley* (E *fly*) 'to fly' (Smith 1987, p. 365)
(127) /fr/
1798 *frédee* (E *afraid*) 'afraid' (Smith 1987, p. 370)
(128) /tr/
1798 *tranga* (E *strong*) 'hard' (Bruyn 1995, p. 189)
(129) /dr/
1798 *dreen* (E *dream*) 'dream' (Smith 1987, p. 365)
(130) /kl/
1798 *kloosie* (E *clothes*) 'clothes' (Smith 1987, p. 345)
(131) /kr/
1798 *kriekie* (E *creek*) 'creek' (Smith 1987, p. 367)
(132) /gl/
1798 *ogrie* (E *ugly*) 'evil; bad' (Smith 1987, p. 384)
(133) /gr/
1798 *hangrie* (E *hungry*) 'hunger' (Smith 1987, p. 384)

Unepenthesized reflexes of obstruent + liquid onset clusters occur in 37 forms (30 words), in which 12 different such clusters are attested:

(134)

Reflexes of	Number of forms	Number of words	Source language
/pl/	7	6	4 E, 2 D
/pr/	1	1	E
/bl/	5	5	4 E, 1 D
/br/	5	4	3 E, 1 D
/fl/	4	2	1 E, 1 D
/fr/	1	1	E
/tr/	2	1	E
/dr/	2	1	E
/kl/	5	3	E
/kr/	1	1	E
/gl/	1	1	E
/gr/	3	3	E

Note that Weygandt (1798) too has *ogrie* and *hangrie* for van Dyk's epenthesized forms *ogeri*, and *hangere*, *hangeri* and *hangerie* respectively.

I have also come across 5 forms (4 words) evincing new obstruent + liquid onset clusters:

(135) /br/
1798 *abra* (E *over*) 'over' (Smith 1987, p. 345)
(136) /tr/
1798 *datra* (E *doctor*) 'doctor' (Smith 1987, p. 376)
(137) /dr/
1798 *miendrie* (E *middle*) 'middle' (Smith 1987, p. 379)
(138) /gl/
1798 *kieglie* (E *tickle*) 'to tickle' (Smith 1987, p. 379)
(139) /gr/
1798 *nengre*[13] (D *neger*) 'slave' (Bruyn 1995, p. 189)

The breakdown per type of clusters is given in the table below:

(140)

New cluster	Number of forms	Number of words	Source language
/br/	1	1	1 E
/tr/	2	2	2 E
/dr/	1	1	1 E
/gl/	1	1	1 E
/gr/	2	1	1 D

4.2.2.11 Occurrence of obstruent + liquid onset clusters in early Sranan

The data set out in tables (141) and (142) are indicative of the occurrence of unepenthesized obstruent + liquid onset clusters in 18th century Sranan. The examples illustrate both reflexes of etyma containing such clusters, in table (141), and instances of new clusters obtaing from phonological processes such as metathesis or syncope, in

[13] See note 11.

table (142). Table (141) includes only examples recorded in at least five different sources. Recall that I did not have access to Fermin (1765), Schumann (1781 and 1783), and Weygandt (1798). In these cases, the symbol "–" should read "not attested in the excerpts at my disposal". Only the first attestations in examples from court records are listed. Relevant portions are in bold characters. The following abbreviations are used: H= Herlein; CR= Court records; F= Fermin; N= Nepveu; Schu= Schumann; Schou= Schouten; Wey= Weygandt.

(141) Obstruent + liquid onset clusters in early Sranan

H 1718	CR	v. D 1765-	F 1765	N 1770	Schu 1781	Schu 1783	Schou 1786	Wey 1798	etymon; gloss
plasje *plesje* *plesse*	*ple* 1745	*plessi*	*pleisi* *plesi*	*plesi* *pleisi*	*plesi*	–	–	*pleesie* *presie*	(E *place*) 'place'
trou	–	*troe* *tro*	*troe*	*troe*	–	*tru*	*trou*	*trou*	(E *true*) 'true'
–	*cloosie* *kloosie* 1732	*klosse* *klossi*	–	–	*klossi*	*klossi*	–	*kloosie* *klosie*	(E *cloth*)
–	*grond* 1761	*gron*	–	*grom*	–	*grun*	–	*gron*	(E *ground*)
–	*gran* 1763	*gran*	–	*gran*	*grang*	*grang*	–	–	(P *grão*)
–	*okri* 1761	–	–	*ogri*	*ougri*	*ougri*	*ogrie*	*ogrie*	(E *ugly*) 'evil'

(142) New obstruent + liquid onset clusters in early Sranan

H 1718	CR	v. D -1765-	N 1770	Schu 1781	Schu 1783	Wey 1798	etymon; gloss
–	–	–	*membre* *membri*	*membre*	*membre*	–	(E *remember*) 'to think'
–	–	*doctre*	*datra*	–	–	*datra*	(E *doctor*) 'doctor'
watre	–	–	*watra*	*watra*	–	–	(E/D water) 'water'
–	*ningre* 1757	–	*ningre*	–	*ningre*	*nengre*	(D *neger*) 'Negro'

4.2.2.12 Early Barbadian and early Saint Kittitian

Further evidence, though admittedly circumstantial, may come from early Barbadian and early Saint Kittitian. According to Plag (1999, p. 190), "Sranan's English base originated in the Caribbean (Barbados and St Kitts)". If so, data from earlier stages of these creoles may provide clues relevant to the fate of obstruent + liquid onset clusters in early Sranan.

The earliest known textual attestations of Barbadian are presented in Rickford and Handler (1994), and Fields (1995). The earliest samples of Barbadian deemed to be authentic date from the last quarter of the 18th century. They contain a small number of reflexes of etyma with obstruent + liquid onset clusters. Of these, just one, dated 1789, exhibits an epenthetic vowel *countérymen* (E *countrymen*) 'countrymen' (Rickford and Handler 1994, p. 232). Other variants of the same lexical items occur in an unepenthesized form in different late 18th century textual attestations. Admittedly, these texts are of less value, since the orthography is standard-like to a large extent (see Plag 1999, p. 177). Note, nevertheless, that other characteristics such as /s/ deletion in /s/ + obstruent onset clusters or the occurrence of paragogic vowels are represented in the transcription used in the sources.

The quality of the early Saint Kittitian texts from approximately 1785, in (Baker and Bruyn eds.) is rather different. According to Plag (1999, p. 177), "for a phonological investigation, the texts seem fairly reliable". He further writes that "the author [...] took great care in representing the language as it was actually spoken", and that this accounts for the "frequent violations of standard orthographic conventions" (Plag 1999, p. 177). Indeed, Mathews' transcriptions reflect not only phenomena such as the deletion of /s/ in reflexes of etyma with /s/ + obstruent onset clusters, [l] ~ [r] fluctuation, paragoge, but also [l] ~ [n] variation[14], which is rare in the Atlantic creoles (Parkvall 2000, p. 37). There is, however, no form exhibiting an epenthesized reflex of an obstruent + liquid onset cluster. Note that according to Corcoran and Mufwene (1999, pp. 84 and 100) Mathews is enclined even to exaggerate the features of Saint Kittitian. In short, not even exaggerated basilectal Saint Kittitian Creole shows any trace of anaptyxis into etymological obstruent + liquid onset clusters. Finally, note that early basilectal Saint Kittitian may have anyway little to do with early Sranan. Corcoran and Mufwene (1999, p. 80) believe that "St Kitts may have contributed to the other colonial English varieties, but this contribution was not necessarily basilectal". If so, epenthesized reflexes of etyma with obstruent + liquid onset clusters are even less likely to have been diffused from St Kitts to Surinam.

To sum up, data from early Barbadian and early Saint Kittitian somewhat weaken the case for initially epenthesized obstruent + liquid onset clusters in Sranan.

[14] See the discussion in Grant (1999) and Shrimpton (1999). Parkvall (2000, p. 37) writes "I have not come across any examples at all from ECs [= English creoles]", although [l] ~ [n] variation is recorded in early Saint Kittitian.

4.2.2.13 Portuguese words shared by Sranan and Saramaccan

One last piece of evidence, which I think is relevant, consists of several Portuguese words (from Smith 1987 and Ladhams 1999a), not occurring in any of the examples in **4.2.2.1** to **4.2.2.8**:

(143) /tr/
tripa (P *tripa*) 'guts' (Ladhams 1999a, p. 236)
(144) /kr/
kriá (P *criar*) 'to bring up' (Smith 1987, p. 369)
kruwa (P *crua*) 'raw' (Smith 1987, p. 369)

First, given their lexical meaning and since they are of Portuguese origin, these words may rather safely be assumed to have entered Sranan at an early stage. Second, the lexical items below are shared by Sranan and early Saramaccan. The latter is a creole in the emergence of which early Sranan was involved. Significantly, both the Sranan words and their early Saramaccan counterparts (see **4.2.3.1** and **4.2.3.2**) preserve, in an unepenthesized form, the original obstruent + liquid onset clusters. Since these words have unepenthesized obstruent + liquid onset clusters in records of early Saramaccan, i.e. *after* the split (ca 1690) from Sranan, they may be assumed to have exhibited such clusters in Sranan too *before* the split (see also **4.2.2.14**)

4.2.2.14 Conclusions

Epenthesized obstruent + liquid onset clusters are not attested in the earliest records of Sranan, with very few exceptions. These exceptions consist of only 4 words, reflexes of E *country*, *hungry*, *shangree*, and *ugly* respectively. Of these, the first 3 are found in only one source (reflexes of *country* and of *hungry* in van Dyk ca. 1765, and of *shangree* in Stedman 1777). Moreover, unepenthesized reflexes of *country*, *hungry*, and *ugly* occur in other contemporary sources.

For the interval 1707–1770, for the records analyzed entirely (Herlein 1718, van Dyk ca. 1765, and Nepveu 1770), the retention rates of obstruent + liquid onset clusters amount to quite impressive averages: 97.56 % of all forms, and respectively 97.94 % of all words.

The almost total absence of epenthesized clusters is conspicuous, but cannot, I think, be attributed to a flawed transcription. Indeed, the various recorders otherwise do note phenomena such as the confusion of the liquids /l/ and /r/[15], the occurrence of

[15] See for details Parkvall (2000, pp.33–34). According to Parkvall (p. 151), "the merger of liquids (unless of Bantu origin) suggests the impact of Gbe" on the English creoles of Surinam.

paragogic vowels or the deletion of /s/ in reflexes of etyma with /s/-initial onset clusters. It rather is unlikely that they would have all, independently and almost consistently, failed to transcribe epenthetic vowels, in tens of forms, most of them representing the same lexical items.

Note also that the earliest occurrence of unepenthesized reflex of an obstruent + liquid onset cluster dates from 1707, *dram* 'dram', i.e. only 57 years after the "potential start date"[16]. Positing an initial CVLV pattern would imply that syncope manages extremely rapidly to obliterate almost every trace of this alleged prior stage. Indeed, there are preciously few pieces of evidence in support of this scenario, although remnants of the earlier unepenthesized forms would have been expected to turn up in larger numbers in the earliest records of Sranan. As for the emergence of new obstruent + liquid clusters in the onset, the earliest examples, e.g. *watre* 'water', date from 1718, i.e. only 68 years after the potential start date. This means that already by 1718 such results of syncope or metathesis do not violate the syllable structure and phonotactic constraints of the language. In both cases then, this would imply a quite rapid and radical change for a language starting out with a phonotactic constraint banning obstruent + liquid clusters in onset position. Note that in his analysis of Schouten's (1783) text, Sebba (1982, p. 27) adduces evidence showing that "[w]e cannot [...] assume that any general rule had applied in the language by this stage to delete unstressed vowels". If one assumes Sranan allows obstruent + liquid onset clusters throughout its history, neither their early occurrence nor their emergence, via syncope or metathesis, requires any additional explanation.

Finally, consider also evidence from early Saramaccan. Thus, Smith (1987, p. 10) writes that Saramaccan is formed "on the basis of Early Sranan – Proto-Sranan as it were". In his turn, Aceto (1996, p. 38) states: "an early variety of Sranan [...] is the source of the English-derived lexical component (as well as the relatively limited number of Dutch-derived items) in Saramaccan". The split between Sranan and Saramaccan is dated to 1690 (Smith 1999a, p. 166). As noted by Smith (1999a, p. 166), "[s]omething very like Sranan must have played a significant role in the development of Saramaccan". Now, if early Saramaccan can be shown to have allowed obstruent + liquid onset clusters, this is strong evidence in support of the hypothesis positing such clusters for early Sranan as well. As will be shown in section

[16] In the sense of Baker (1995b, p. 8).

4.2.3, this is precisely what appears to be the case in early Saramaccan.

In light of the above, Sranan appears to have allowed obstruent + liquid onset clusters throughout its history (*contra* Voorhoeve 1961, p. 103, Alleyne 1980, pp. 45–46, and Smith 1987, p. 346).

4.2.3 Early Saramaccan (1778–1805)

In this section I look at the earliest records of Saramaccan. In doing so, I build on Aceto (1996), who only selects data from Schumann (1778). I go through all relevant forms recorded in Schumann's (1778) dictionary. I also examine another dictionary of early Saramaccan (Riemer 1779). In addition, I look at other forms occurring in records of early Saramaccan.

The data presented are from Voorhoeve (1961), Donicie and Voorhoeve (1962), Smith (1987 and 1996) and Arends and Perl (1995). Portuguese etyma are also from Aceto (1996), Ladhams (1999a) and Smith (1987 and 1999)[17], while West African ones are from Aceto (1999) and Baker (1999).

4.2.3.1 Schumann (1778)

Consider first the reflexes of etyma with obstruent + liquid onset clusters recorded in Schumann's (1778) dictionary of Saramaccan, *apud* Donicie and Voorhoeve (1962):

(145) /pl/
1778 *planta* (P *plantar*) 'to plant' (Donicie and Voorhoeve 1962, p. 83)
(146) /pr/
1778 *plattu* (P *prato*) 'bowl; plate' (Donicie and Voorhoeve 1962, 83)
(147) /bl/
1778 *blakka* (E *black*) 'black' (Donicie and Voorhoeve 1962, p. 12)
(148) /br/
1778 *bladi* (E *broad*) 'breadth; broad' (Donicie and Voorhoeve 1962, p. 12)
(149) /fl/
1778 *flamma* (P *flamma*) 'flame' (Donicie and Voorhoeve 1962, p. VII)
(150) /fr/
1778 *fréde* (E *afraid*) 'fear; to fear' (Donicie and Voorhoeve 1962, p. 32)
(151) /tr/
1778 *bullitiri* (E *bullytree*) 'yeddish-yellow wood' (Donicie and Voorhoeve 1962,
1778 *kattantì* (E *cotton*, E *tree*) 'tree species' (Donicie and Voorhoeve 1962, p. 54)
1778 *kontri* (E *country*) 'land, region' (Donicie and Voorhoeve 1962, p. 58)
1778 *oter* (P *outro*) 'other' (Donicie and Voorhoeve 1962, p. 82)
1778 *otre* (P *outro*) 'other' (Donicie and Voorhoeve 1962, p. 82)
1778 *otro* (P *outro*) 'other' (Donicie and Voorhoeve 1962, p. 82)

[17] The meaning of Portuguese etyma was sometimes checked in Mocanu and Mocanu (2002).

1778 *tiepa* (P *tripa*) 'guts' (Ladhams 1999a, p. 239)

(152) /dr/

1778 *dindra* (P *dentro* 'inside') 'to enter' (Donicie and Voorhoeve 1962, p. 24)

(153) /kl/

1778 *klossu* (E *cloth*) 'cloth; clothing' (Donicie and Voorhoeve 1962, p. 59)

(154) /kr/

1778 *krabbo* (D *krabben*) 'to scrape' (Donicie and Voorhoeve 1962, p. 51)

(155) /gl/

1778 *ougri* (E *ugly*) 'bad, evil' (Donicie and Voorhoeve 1962, p. 115)

(156) /gr/

1778 *grandi* (P *grande*) 'grown up' (Donicie and Voorhoeve 1962, p. 38)

In (157) I summarize the findings about reflexes of obtruent + liquid onset clusters (indicating the number of forms, the number of words, and the source language):

(157)

Reflexes of	Number of forms	Number of words	Source language
/pl/	8	7	3 E, 2 P, 2 D
/pr/	4	3	2 E, 1 P
/bl/	6	3	2 E, 1 D
/br/	15	12	5 E, 6 P, 1 D
/fl/	7	4	1 E, 1 P, 2 D
/fr/	4	4	2 E, 1 P, 1 D
/tr/	14	10	6 E, 4 P
/dr/	9	8	4 E, 3 P, 1 D
/kl/	2	1	E
/kr/	8	7	4 E, 2 P, 1 D
/gl/	1	1	E
/gr/	12	11	5 E, 6 P

The retention rate of obstruent + liquid onset clusters amounts to 96.67 % out of 90 forms, and to 97.18 % out of 71 words respectively. Note that in these calculations the phonetic realization of the liquid, i.e. [l] or [r] is ignored, given the [l] ~ [r] variation. Also ignored is the fact that, occasionally, the early Saramaccan reflex of an obstruent differs from that in the etymon. This is the case of a few instances exhibiting the [+voice, COR] stop /d/ instead of the [-voice] one /t/, and the [+voice, DOR] velar stop /g/ instead of the [-voice] one /k/ in the etymon.

The exceptions consist of *bullitiri* and *oter*. The first involves vowel epenthesis while the second is an instance of metathesis. Notice, however, that *oter* also has a variant with an obstruent + liquid cluster in the onset: *otro*. While *bullitiri* does not have an alternative form, the reflex of E *tree* occurs without an epenthetic vowel in *kattantri*. Finally, one apparent exception, *tiepa*, is most likely a misprint, with *ie* instead of *ri*.

Next, consider the numerous cases of new clusters obtaining from e.g.

metathesis, reinterpretation of morpheme boundaries, etc. (see also **Appendix 9**):

(158) /pl/
1778 *piple* (E *people*) 'people' (Donicie and Voorhoeve 1962, p. VII)
(159) /pr/
1778 *pepre* (E *pepper* / D *peper*) 'pepper' (Donicie and Voorhoeve 1962, p. 87)
(160) /bl/
1778 *blâku* (P *buraco*) 'hole' (Donicie and Voorhoeve 1962, p. 13)
1778 *nblu* (Kikongo *mbulu*[18]) 'forehead' (Donicie and Voorhoeve 1962, p. 74)
(161) /br/
1778 *bronn* (E burn) 'to burn' (Donicie and Voorhoeve 1962, p. 20)
(162) /fl/
1778 *flattà* (P *faltar*) 'to lack' (Donicie and Voorhoeve 1962, 30)
(163) /fr/
1778 *frebbèh* (P *ferver*) 'to boil; to cook' (Donicie and Voorhoeve 1962, p. 32)
(164) /tr/
1778 *battra* (E *bottle*) 'bottle' (Donicie and Voorhoeve 1962, p. 15)
(165) /dr/
1778 *dretta* (P *derreter*) 'to melt' (Donicie and Voorhoeve 1962, p. VII)
(166) /kr/
1778 *akra* (Efik/Igbo/Yoruba *akara*) 'pancake' (Donicie and Voorhoeve 1962, p. 5)
1778 *bakkra* (Efik *mbakara*) 'European' (Donicie and Voorhoeve 1962, p. 14)
(167) /gl/
1778 *hagla* (D *hagel*) 'hail' (Donicie and Voorhoeve 1962, p. 43)
(168) /gr/
1778 *grangánda* (P *garganta*) 'throat' (Donicie and Voorhoeve 1962, p. 39)

48 forms, representing 46 words, exhibit new obstruent + liquid onset clusters, as set out in the following table:

(169):

New cluster	Number of forms	Number of words	Source language
/pl/	3	3	1 E, 2 P
/pr/	9	8	1 E, 1 E/D, 4 P, 2 D
/bl/	2	2	P, Kikongo
/br/	5	5	4 E, 1 P
/fl/	1	1	P
/fr/	3	3	1 E, 1 P, 1 D
/tr/	9	8	1 E, 1 E/D, 4 P
/dr/	6	6	2 E, 3 P, 1 D
/kr/	6	6	1 E, 2 P, 1 D, 1 Efik/Igbo/Yoruba, 1 Efik
/gl/	1	1	D
/gr/	3	3	2 P, 1 D

4.2.3.2 Riemer (1779)

A few preliminary remarks are in order here. I have decided to include data from Riemer (1779), even though much of it coincides with Schumann's (1778)

[18] Norval Smith (personal communication, October 2004).

dictionary. There are, however, some differences between the two. For instance, the form of some of the words recorded by both authors differ. In addition, at least as far as reflexes of obstruent + liquid onset clusters are concerned, Riemer's dictionary registers a larger number of such forms.

Consider the following examples of reflexes of obstruent + liquid onset clusters (see also **Appendix 10**):

(170) /pl/
1779 *planta* (P *plantar*) 'to plant' (Arends and Perl 1995, p. 337)
(171) /pr/
1779 *plattu* (P *prato*) 'bowl; plate' (Arends and Perl 1995, p. 337)
(172) /bl/
1779 *blakka* (E *black*) 'black' (Arends and Perl 1995, p. 265)
(173) /br/
1779 *blaffo* (E *broth*) 'broth' (Arends and Perl 1995, p. 265)
(174) /fl/
1779 *flamma* (P *flamma*) 'flame' (Arends and Perl 1995, p. 281)
(175) /fr/
1779 *fruta* (P *fruta*) 'fruit' (Arends and Perl 1995, p. 283)
(176) /θr/
1779 *trueh* (E *throw away*) 'to throw (away)' (Arends and Perl 1995, p. 361)
(177) /tr/
1779 *bullitiri* (E *bully tree*) 'reddish-yellow wood' (Arends and Perl 1995, p. 270)
1779 *bullentri* (E *bully tree*)'reddish-yellow wood' (Arends and Perl 1995, p.270)
1779 *kattantrì* (E *cotton, tree*) 'tree species' (Arends and Perl 1995, p. 303)
1779 *oter* (P *outro*) 'other' (Arends and Perl 1995, p. 331)
1779 *oto* (P *outro*) 'other' (Arends and Perl 1995, p. 331)
1779 *otre* (P *outro*) 'other' (Arends and Perl 1995, p. 331)
1779 *otro* (P *outro*) 'other' (Arends and Perl 1995, p. 331)
(178) /dr/
1779 *dindra* (P *dentro* 'inside') 'to enter' (Arends and Perl 1995, p. 274)
(179) /kl/
1779 *kloshibai* (E *close by*) 'close by' (Arends and Perl 1995, p. 304)
(180) /kr/
1779 *kreh* (E *cry*) 'to cry' (Arends and Perl 1995, p. 308)
(181) /gl/
1779 *ougri* (E *ugly*) 'bad; evil' (Arends and Perl 1995, p. 331)
(182) /gr/
1779 *grandi* (P *grande*) 'grown up' (Arends and Perl 1995, p. 287)

The reflexes of etyma with obstruent + liquid onset clusters listed in Riemer (1779) consist of 116 forms, representing 84 words. The breakdown per type of obstruent + liquid onset cluster is shown in table (183):

(183)

Reflexes of	Number of forms	Number of words	Source language
/pl/	10	8	4 E, 2 P, 2 D
/pr/	2	2	1 E, 1 P
/bl/	6	4	3 E, 1 D
/br/	20	13	7 E, 6 P, 1 D
/fl/	8	5	1 E, 1 P, 3 D
/fr/	3	3	2 E, 1 P
/θr/	1	1	E
/tr/	23	16	7 E, 6 P, 2 P+E, 1 P+D
/dr/	12	8	4 E, 3 P, 1 D
/kl/	4	2	2 E
/kr/	11	10	5 E, 2 P, 2 D, 1 Twi
/gl/	1	1	E
/gr/	15	11	5 E, 6 P

If [l] ~ [r] variation and, in isolated cases, the realization of [-voice] stops, as well as the replacement of /θ/ by /t/ are ignored, the retention rate of obstruent + liquid onset clusters is as follows: 97.41 % of all forms, and 97.61 % of all words respectively.

One exception exhibits vowel epenthesis: *bullitiri*. A second one, *oter*, which also occurs in three compound words, obtains via metathesis. However, they all have variants with an obstruent + liquid onset cluster: *bullentri* and *otro* respectively. A third exception, the reflex *oto* of P *outro* 'other', appears to illustrate liquid deletion.

As in Schumann (1778), Riemer (1779) includes forms exhibiting new obstruent + liquid onset clusters, obtaining from various processes (see also **Appendix 10**):

(184) /pl/
1779 *pipli* (E *people*) 'people' (Arends and Perl 1995, p. 336)
(185) /pr/
1779 *pepre* (E *pepper*, D *peper*) 'pepper' (Arends and Perl 1995, p. 335)
(186) /bl/
1779 *blaku* (P *buraco*) 'hole' (Arends and Perl 1995, p. 265)
1779 *nblu* (Kikongo *mbulu*) 'brow' (Arends and Perl 1995, p. 270)
(187) /br/
1779 *bronn* (E *burn*) 'to burn' (Arends and Perl 1995, p. 269)
(188) /fl/
1779 *flatta* (P *faltar*) 'to lack' (Arends and Perl 1995, p. 281)
(189) /fr/
1779 *frebbeh* (P *ferver*) 'to boil; to cook' (Arends and Perl 1995, p. 282)
(190) /tr/
1779 *battra* (E *bottle*) 'bottle' (Arends and Perl 1995, p. 262)
(191) /dr/
1779 *dondro* (D *donder*) 'thunder' (Arends and Perl 1995, p. 275)
(192) /kr/
1779 *kruttu* (E *court*) 'court; to deliberate' (Arends and Perl 1995, p. 309)

(193) /gl/
1779 *hagla* (D *hagel*) 'hail' (Arends and Perl 1995, p. 289)
(194) /gr/
1779 *dungru* (D *donker*) 'dark' (Arends and Perl 1995, p. 277)

New obstruent + liquid onset clusters occur in a total of 48 such forms, representing 45 words. Table (195) summarizes the distribution of these clusters:

(195)

New cluster	Number of forms	Number of words	Source language
/pl/	3	3	1 E, 2 P
/pr/	8	7	1 E, 1 E/D, 4 P, 1 D
/bl/	1	1	P
/br/	4	4	E
/fl/	1	1	P
/fr/	3	3	1 E, 1 P, 1 D
/tr/	10	8	3 E, 1 E/D, 4 P
/dr/	9	9	4 E, 3 P, 2 D
/kr/	7	7	2 E, 2 P, 1 D, 1 Efik/Igbo/Yoruba, 1 Efik
/gl/	1	1	D
/gr/	3	3	1 P, 2 D

4.2.3.3 Maroon letters (1789, 1790 and 1791)

The so-called Maroon letters consist of a series of letters written by native speakers of late 18th century Saramaccan. Some of these letters have been edited by Arends and Perl (1995, pp. 383–386). Forms found in such letters are also quoted in Smith (1987).

I have identified the following reflexes of etyma with obstruent + liquid onset clusters in the corpus of letters at my disposal (see also **Appendix 11**):

(196) /pl/
1791 *preh* (E *play*) 'joy' (Arends and Perl 1995, p. 384)
(197) /bl/
1791 *blakka* (E *black*) 'black' (Arends and Perl 1995, p. 384)
(198) /br/
1789 *brala* (E *brother*) 'brother' (Smith 1987, p. 370)
(199) /tr/
1790 *contri* (E *country*) 'country' (Arends and Perl 1995, p. 386)
(200) /kr/
1790 *kreh* (E *cry*) 'to cry' (Arends and Perl 1995, p. 383)
(201) /gr/
1790 *grond* (E *ground*) 'earth' (Arends and Perl 1995, p. 386)

In addition, there are several examples of new clusters (see also **Appendix 11**):

(202) /br/
1790 *bribi* (E *believe*) 'to believe' (Arends and Perl 1995, p. 386)
(203) /tr/
1791 *watra* (E/D *water*) 'water' (Arends and Perl 1995, p. 384)

The results are set out as follows: obstruent + liquid onset clusters in table (204), and new obstruent + liquid onset clusters in table (205):

(204)

Reflexes of	Number of forms	Number of words	Source language
/pl/	1	1	E
/bl/	1	1	E
/br/	6	3	1 E, 1 P, 1 D
/tr/	7	4	E
/kr/	2	2	1 E, 1 D
/gr/	3	3	2 E, 1 P

(205)

New cluster	Number of forms	Number of words	Source language
/br/	3	3	E
/tr/	1	1	1 E/D

In the case of the Maroon letters dated above 1790 and 1791 the retention rate of obstruent + liquid onset clusters is 100 % of all forms and of all words.

4.2.3.4 Wietz (1805)

The last source for early Saramaccan that I refer to is the translation into Saramaccan of the New Testament by Wietz (1805). I did not have access to an edition of Wietz (1805), but Voorhoeve (1961) and Smith (1987) include forms from this text. This is not therefore an exhaustive analysis, but the results are still, I think, illustrative of the general picture.

Below are listed examples of reflexes of etyma containing obstruent + liquid onset clusters:

(206) /pr/
1805 *praija* (P *espraiar*) 'to scatter' (Voorhoeve 1961, p. 104)
(207) /tr/
1805 *kondre* (E *country*) 'country' (Smith 1987, p. 381)
1805 *tripa* (P *tripa*) 'guts' (Voorhoeve 1961, p. 104)
(208) /kr/
1805 *krukkutu* (E *crooked*) 'wrong' (Voorhoeve 1961, p. 104)
(209) /gr/
1805 *grun* (E *ground*) 'land' (Voorhoeve 1961, p. 104)

Instances of new obstruent + liquid onset clusters include the following one:

(210) /tr/
1805 *krottuman* (E *court, man*) 'judge' (Smith 1996, p. 118)

The findings regarding unepenthesixed obstruent + liquid onset clusters, whether reflexes of those in the etyma or new ones, are set out in table (211) and (212) respectively:

(211)

Reflexes of	Number of forms	Number of words	Source language
/pr/	1	1	P
/tr/	2	2	1 E, 1 P
/kr/	1	1	E
/gr/	1	1	E

(212)

New cluster	Number of forms	Number of words	Source language
/kr/	1	1	E

4.2.3.5 Occurrence of obstruent + liquid onset clusters in early Saramaccan

In light of the examples presented above, it appears that obstruent + liquid onset clusters are attested in early Saramaccan. In table (213) I present forms with obstruent + liquid onset clusters recorded in at least one source other than Schumann (1778) and Riemer (1779). Forms attested only in these two sources have therefore not been included. I have chosen this somewhat stronger criterion since Riemer's (1779) dictionary of Saramaccan is said by some to rely too heavily on Schumann's (1778). Relevant portions are in bold characters.

(213) Obstruent + liquid onset clusters in early Saramaccan

Schumann 1778	Riemer 1779	letter 1789	letter 1790	letter 1791	Wietz 1805	etymon; gloss
praija	*praija*	–	–	–	*praija*	(P *espraiar*) 'to scatter'
pre	*pre*	–	–	*preh*	–	(E *play*) '(to) play
blakka *brakka*	*blakka* *brakka*	–	–	*blakka*	–	(E *black*) 'black'
brára	*brara*	*brala* *brara*	*brara*	*brara*	–	(E *brother*) 'brother'
kubri	*kubri*	–	*kubri*	–	–	(P *cubrir*) 'to cover'
tranga	*tranga*	–	*tranga*	*tranga*	–	(E *strong*) 'strength'
kontri	*contri* *kontri*	–	*contri*	*contri* *contri-*	*kondre*	(E *country*) 'country'
tripa	*-tripa*	–	–	–	*tripa*	(P *tripa*) 'guts'
tru	*tru*	–	–	*troe*	–	(E *true*) 'true'
kre	*kreh*	–	–	*kreh*	–	(E *cry*) 'to cry'
skrifi	*skrifi*	–	*schriffi*	–	–	(D *schrijven*) 'to write'
krukkutu	*krukkutu*	–	–	–	*krukkutu*	(E *crooked*) 'wrong'
grang	*grang*	–	–	*grang*	–	(P *grão*) 'great'
hangri	*hangri*	–	*hangri*	*hangri*	–	(E *hungry*) 'yearning'
grun	*grunn*	–	*grond*	–	*grun*	(E *ground*) 'ground'

Table (214) presents new obstruent + liquid onset clusters, according to the same criteria:

(214) New obstruent + liquid onset clusters in early Saramaccan

Schumann 1778	Riemer 1779	letter 1790	letter 1791	Wietz 1805	etymon; gloss
bríbi	*bribi*	*bribi*	–	–	(E *believe*) 'belief'
dübri	*dübri*	*dubri*	–	–	(E *devil*) 'devil'
membre	*membre*	–	*membre*	–	(E *remember*) 'to think'
frebbèh	*frebbeh*	–	–	–	(P *ferver*) 'to boil'
watra	*watra*	–	*watra*	–	(E/D *water*) 'water'
kruttu	*kruttu*	–	–	*krottu-*	(E *court*) 'court'

4.2.3.6 Conclusions

While Sebba (1982) and, more recently, Aceto (1996) maintain that early Saramaccan allows obstruent + liquid onset clusters, other creolists have raised doubts about their occurrence in earlier stages of the language. In what follows, I briefly present their arguments and will try to refute them.

Thus, with respect to Wietz (1805), Voorhoeve (1961, p. 105) writes that "at present some interconsonantal vowels may be shortened considerably especially when a vowel of the same quality follows, and I think that the translator failed to hear these shortened vowels". A similar argument has been put forth by Smith (1977b, pp. 46–47, and 1987, p. 343) in connection with Schumann's (1778) transcriptions of Saramaccan. First, as stressed by Aceto (1996, p. 27), Schumann is aware of the existence of variants with epenthetic vowels[19] and duly notes them, e.g. *nbulù* (E *brow*), beside *nblu*, 'forehead'. Second, even if Voorhoeve and Smith were right, this would not explain why obstruent + liquid onset clusters appear, in significant numbers, in at least four other independent sources.

Smith (1987, p. 346) also states that "the recorders's knowledge of the source languages conceivably played a role". According to Smith (1987, p. 346): "[i]t would seem unlikely to be due to chance that virtually the only examples of initial clusters in stressed syllables in the source language that are given in epenthesized form in Schumann (1778) are from Portuguese, and not from the presumably better-known Dutch or English". Note first the "presumably" in the quote just given. Second, an alleged "normalizing" influence conducive to the "restoration" of obstruent + liquid onset clusters cannot, however, be posited in the case of Saramaccan words of West African origin. Consider e.g. 1778 *akra* (Efik/Igbo/Yoruba *akara*), and 1778 *bakkra* (Efik *mbakara*). As can be seen, the Saramaccan reflexes exhibit an obstruent + liquid onset cluster, which does not occur in the corresponding etyma.

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[19] And also variants obtaining from metathesis, e.g. *oter* for *otre* (P *outro*) 'other'.

Next, why would various, independent sources consistently fail to notice and/or transcribe epenthetic vowels breaking up obstruent + liquid onset clusters? Their transcriptions attest otherwise a variety of phenomena, such as [l] ~ [r] variation[20], occasional replacement of [+voice] coronal and velar stops by their [-voice] counterparts, paragogic vowels, deletion of /s/ in /s/-initial onset clusters. In other words, why would several sources all fail to notice and/or transcribe just one and the same phenomenon?

Moreover, as mentioned in **4.2.3.3**, the authors of the Maroon letters were native speakers of Saramaccan. Consequently, they would not be expected to consistently omit the alleged epenthetic vowel of their own mother tongue.

Last but not least, as mentioned in **4.2.2.14**, Saramaccan is formed in late 17th and early 18th centuries on the basis of early Sranan (Smith 1987, p. 10, and Aceto 1996, pp. 26 and 38). I have shown, in **4.2**, that Sranan has allowed obstruent + liquid onset clusters thrughout its history. Under the circumstances, the occurrence of these clusters in early Saramaccan is not implausible or surprising.

On the basis of the textual attestations adduced, I would like to claim, with Sebba (1982) and Aceto (1996), that in early Saramaccan obstruent + liquid onset clusters appear to have been permitted. Anaptyxis into these clusters occurs at a later stage. I assume the following relative and absolute chronologies:

(215) stage I. OLV > stage II. OVLV > stage III. OVV

(216) stage I : pre-1805
stage II : post-1805
stage III: not yet completed

On this analysis, a form such as *bóŏ* (E *blow*) 'to blow' is the result of the following diachronic stages:

(217) *blo / bro* > **bolo* > *bóŏ*

In most cases, stage II is not attested. However, in some "fossilized" forms, stage II is the last one, e.g. *foló* (P *flor*):

(218) *floro* > *foló*

Aceto (1996, p. 36) states that "Saramaccan has not yet been documented to display [...] alternate lateral-full forms which would provide solid evidence of the unattested epenthesized examples", such as **bolo* in example (217). However, I have identified in modern Saramaccan three forms, reflexes of etyma with an obstruent +

[20] See note 15.

liquid onset cluster, which have variants with intervocalic /l/. Consider the following examples, for which I also list, if attested, the 1778 form in Saramaccan and the Sranan forms:

(219) /pr/
piín ~ *pilí* (D *priem*) 'needle for knitting' (Donicie and Voorhoeve 1962, p. 88)
Cf. Sranan *prin* (Donicie and Voorhoeve 1962, p. 88)

(220) /kr/
kóóó ~ *kólólóo* (< ?) 'for good (ideophone)' (Donicie and Voorhoeve 1962, p. 58)
Cf. 1778 Saramaccan *krololò* (Donicie and Voorhoeve 1962, p. 5)

(221) /gr/
geéfi ~ *geléfi* (D *griffel*) 'slate-pencil' (Donicie and Voorhoeve 1962, p. 41)
Cf. Sranan *grefi* (Donicie and Voorhoeve 1962, p. 41)

Of these, *kólólóo* is the "missing link" between an attested pre-1805 unepenthesized form, i.e. *krololò*, and the variant without the intervocalic liquid, i.e. *kóóó*. In other words, this is an example of what Aceto (1996, p. 36) is looking for. As for the other two examples, they are unfortunately not registered in pre-1805 records of Saramaccan. However, three factors suggest, I think, that the Saramaccan forms date from this period. First, their lexical meaning makes it likely. Second, they are also attested in Sranan. Third, the existence of the variants with intervocalic /l/ makes it unlikely that they are recent borrowings. Indeed, recent borrowings with epenthesized obstruent + liquid onset do not have alternate forms without /l/:

(222) *filígi* / **fiígi mashín* (D *vlieg* 'flying', *machine* 'machine') 'airplane' (Betian & al. 2000, p. 68)

(223) *talĕn* / **taĕn* (D *trein*) 'train' (Betian & al. 2000, p. 111)

As a final remark, the occurrence of nonepenthesized obstruent + liquid onset clusters in Wietz (1805), exemplified in **4.2.3.4**, offers a more precise terminus *post quem* than Acetos's (1996, p. 35), who only refers to the post-1778 (i.e. post Schumann's dictionary) period.

4.2.4 Early Aluku

There are only scant records of early Aluku, consisting of word-lists, isolated lexical items and some place names. They only go back to the second half of the 19th century, i.e. some one hundred years after the emergence of this variety, around 1775 (Goury 2003, p. 19). The earliest sample that I know of dates from 1877. There are three others, dating from 1890, 1891 and 1893. The authors of the first three records of early Aluku are French, which makes English and/or Dutch normalizing[21] influence less likely.

As for the treatment of obstruent + liquid onset clusters, three types of reflexes are attested. First, there are quite a few instances of unepenthesized obstruent + liquid onset clusters (see also **Appendix 12**):

(224) /pl/
1877 *planca* (E / D *plank*) 'board' (Bilby 1993, p. 33)
(225) /br/
1877 *broco* (E *broke*) 'broken' (Bilby 1993, p. 33)
(226) /gl/
1877 *glasi* (E *glass* / D *glas*) 'glass' (Bilby 1993, p. 33)
(227) /kr/
1891 *krassi-* (E *across*) 'blocked' (Bilby 1993, p. 33)
(228) /gr/
1877 *groom* (E *ground*) 'ground' (Bilby 1993, p. 33)

In addition to these unepenthesized obstruent + liquid onset clusters, there are cases of new such clusters:

(229) /tr/
1877 *watra* (E/D *water*) 'water' (Bilby 1993, p. 33)
(230) /dr/
1877 *hondro* (D *honderd*) 'hundred' (Bilby 1993, p. 33)
(231) /gr/
1877 *neugré* (D *neger*) 'Negro' (Bilby 1993, p. 33)

Next, there are a number of lexical items exhibiting vowel epenthesis with vowel copying. As noted by Bilby (1993, p. 33), in all such cases, "intervocalic /l/ between like vowels was a regular feature at this time".

(232) /dr/
1877 *dili* (D *drie*) 'three' (Bilby 1993, p. 33)
(233) /kl/
1893 *kolo* (Ewe *klò*, Ge *è-kló*, Gu *òklo*) 'turtle' (Bilby 1993, p. 33)

Finally, there are some cases of "occasional liquid deletion" (Bilby 1993, p. 33):

(234) /fr/
1877 *feda* (D *frijdag*) 'Friday' (Bilby 1993, p. 33)
(235) /dr/
1877 *di* (D *drie*) 'three' (Bilby 1993, p. 33)

Note, however, that, on currently evidence, it is impossible to know for sure whether such forms really obtain from liquid deletion, as interpreted by Bilby (1993, p. 33). On his analysis, e.g. Aluku *di* obtains as follows:

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[21] In the sense of Hancock (1977) and Avram (2000c).

(236) D *drie* > *di*

An alternative scenario would posit vowel epenthesis *cum* vowel copying and subsequent deletion of the identical vowel (cf. also **4.3.4**). Consider e.g. the hypothetical case, on this analysis, of *di*':

(237) D *drie* > Aluku *dili* > **dii* > *di*

As can be seen, of these three stages, the second one is not recorded, while the first and the third ones correspond to contemporary, competing forms in late 19th century Aluku, as shown below.

A final remark is in order here. The occurrence of unepenthesized obstruent + liquid onset clusters cannot simply be dismissed by assuming faulty transcriptions. First, they occur in three independent sources, in 1877, 1890, and 1891. Second, as already mentioned, the authors of these records are French, presumably less inclined to restore more English- and/or Dutch-like forms. Third, the author of the records from 1877 notes unepenthesized obstruent + liquid onset clusters as well as cases of simplification via vowel epenthesis or liquid deletion. This is indicative of a careful transcriber.

Consider also the issue of data from Kumanti, a cult language spoken by Aluku mediums. As noted by Bilby (1993, p. 32), "[s]ome of the cult languages spoken by Aluku mediums while in a state of possession display [...] unepenthesized clusters". In addition, "not least striking about these examples is the presence of both /r/ and /l/" (Bilby 1993, p. 33). Consider examples of reflexes of etyma with obstruent + liquid onset clusters such as:

(238) /tr/
tróta (E *throat*) 'throat' (Bilby 1993, p. 33)

(239) /gr/
gron (E *ground*) 'ground' (Bilby 1993, p. 33)

Also attested are instances of new obstruent + liquid onset clusters:

(240) /gr/
tígri (E *tiger*) 'jaguar' (Bilby 1993, p. 33)

(241) /fl/
fláuye (E *far away*) 'far away' (Bilby 1993, p. 33)
flawié (E *far away*) 'far away' (Bilby 1993, p. 33)

Clearly then, Aluku still had forms exhibiting obstruent + liquid onset clusters as late as 1891, as set out in tables (242) and (243) below.

(242) Obstruent + liquid onset clusters in early Aluku and Kumanti

Aluku 1877	Aluku 1890	Aluku 1891	Kumanti -1987	etymon; gloss
planca	–	–	–	(E/D *plank*) 'board'
broco	–	–	–	(E *broke*) 'to break'
–	–	–	*tróta*	(E *throat*) 'throat'
–	–	*krassi-*	–	(E *across*) 'blocked'
–	–	–	–	(E *cry*) 'to cry'
glasi	–	–	–	(E *glass* / D *glas*)'glass'
–	*gromm* / *groom*	–	*gron*	(E *ground*) 'ground'

(243) New obstruent + liquid onset clusters in early Aluku and Kumanti

Aluku 1877	Aluku 1890	Kumanti -1987	etymon; gloss
watra	*-watra*	–	(E / D *water*) 'water'
hondro	–	–	(D *honderd*) 'hundred'
–	–	*fláuy* *fláuye*	(E *far away*)
neugré	–	–	(D *neger*) 'Negro'
–	–	*tígri*	(E *tiger*) 'jaguar'

Mention should also be made of another cult language, not exemplified in tables (242) and (243). Bilby (1993, p. 33) briefly discusses[22] "the speech of Aluku mediums possessed specifically by *yooka* (ghosts, many of them ancestral)". According to him, it "is *typically* [emphasis added] peppered with intervocalic liquids (both /r/ and /l/) between like vowels, as well as unepenthesized CL [= consonant liquid] clusters" (Bilby 1993, p. 33).

The occurrence in present-day cult languages of both obstruent + /r/ onset clusters and of intervocalic /r/ corroborates the evidence from records of late 19th century Aluku. Evidence from Kumanti (Hurault 1983 and Bilby 1993) and Bilby's (1993) remarks about the language of *yooka*-possessed Aluku mediums are relevant for the past history of obstruent + liquid onset clusters. Indeed, these "varieties of possession speech – particularly those associated with ancestral spirits – have been shown to retain archaic forms that have been lost, or have survived only marginally, in normal speech" (Bilby 1993, p. 33).

As shown in section **4.3.4**, in modern Aluku obstruent + liquid onset clusters are disallowed. Reflexes of such clusters exhibit vowel epenthesis and liquid deletion. There are two possible scenarios for the diachronic evolution of reflexes of etyma with obstruent + liquid onset clusters. The first one, along the lines of Voorhoeve (1961, p. 103), Alleyne (1980, pp. 45–46), Smith (1987, p. 346), and Goury (2003, p. 55), would posit initial anaptyxis into the obstruent + liquid onset cluster and

[22] Without, unfortunately, providing any examples.

subsequent liquid deletion between identical vowels[23]:

(244) stage I. OVLV > stage II: OVV

There are a number of drawbacks with this sequence of events. First, vowel epenthesis is, by all accounts, a strategy for the resolution of illicit clusters, disallowed by the substrate languages. Consider, however, the form *kolo* 'turtle', recorded in 1893, and listed under (233) above. Given that its West African etymon, whether Ewe, Ge or Gu, does contain the onset cluster /kl/, why would speakers of early Aluku, presumably under the influence of their substrate languages, have reduced the cluster?

Second, consider the implications of the sequence of stages postulated by Voorhoeve (1961), Alleyne (1980), Smith (1987), and Goury (2003). On their analysis, Aluku starts out with epenthesized obstruent + liquid onset clusters. In late 19th century, i.e. only some hundred years after the emergence of the language, as illustrated above, Aluku appears to allow such clusters. That would presuppose that sometime during this interval syncope must have occurred. Mysteriously, between the end of the 19th century and 1952 – the date of the earliest records of modern Aluku (Hurault 1983) – i.e. in some 60 years, the very obstruent + liquid onset clusters obtaining from prior syncope are, again, epenthesized and the liquid between like vowels deleted. This effectively means that the relative chronology in (244) should actually be broken down into what follows:

(245) stage I. OVLV > stage II. OLV > stage III. OVLV > stage IV. OVV

While not impossible, this does not look like a very plausible scenario.

Third, consider comparative evidence from the closely related variety Kwinti. Kwinti is like Aluku an offshoot of Ndyuka, from which they split in the second half of the 18th century. As shown in section **4.2.5**, Kwinti seems to have allowed obstruent + liquid onset clusters throughout its history. Positing initially epenthesized obstruent + liquid onset clusters in Aluku cannot account for the situation in Kwinti.

I would like to claim that the samples of late 19th century Aluku illustrate a stage of transition from originally unepenthesized obstruent + liquid clusters to the current stage with epenthetic vowels and liquid deletion. Therefore, I basically suggest the following relative chronology:

(246) stage I. OLV > stage OVLV > stage III. OVV

[23] O= obstruent, V= vowel, L= liquid.

As for the absolute chronology of events, a tentative version would look like:

(247) stage I: 1775
stage II.: end of 19th century
stage III: before 1952

I therefore conclude that in its earlier stages Aluku permitted obstruent + liquid onset clusters.

4.2.5 Special case 1: Kwinti

Kwinti is, like Aluku, an 18th century offshoot of Ndyuka. Kwinti is another English-based creole of Surinam for which we unfortunately lack early records. Moreover, even the modern variety is one of the least documented creoles of Surinam. The database consists only of a word-list (Huttar 1981) of 170 items, some of which are discussed in Smith and Huttar (1984), and of the syntactic patterns in Hancock (1987). However, in this case again, something of the linguistic past can be inferred from present-day data.

As for the treatment of obstruent + liquid onset clusters, I have only identified the following epenthesized reflexes:

(248) /bl/
buúlu (E *bloed*) 'blood' (Smith and Huttar 1984, p. 26)
(249) /fl/
fuúlu (D *vloed*) 'flood' (Smith and Huttar, p. 26)
(250) /dr/
dilí (D *drie*) 'three' Smith and Huttar (1984, p. 25)
(251) /gr/
golon (E *ground*) 'ground' Smith and Huttar (1984, p. 25)
gulún (D *groen*) 'green' Smith and Huttar (1984, p. 25)

As can be seen, two forms, (248) and (249), are more "advanced", exhibiting liquid deletion. Examples (250) and (251) also illustrate the replacement of the original rhotic liquid /r/ by the lateral one /l/. The epenthetic vowel in all the examples is a copy of the vowel following the original obstruent + liquid onset cluster.

What is of interest, though, is the fact that a number of Kwinti lexical items exhibit unepenthesized reflexes of obstruent + liquid onset clusters. These include the following:

(252) /pl/:
plata (D *plat*) 'flat' (Smith and Huttar 1984, p. 25)

(253) /bl/:
bláka (E *black*) 'black' (Smith and Huttar 1984, p. 25)
bláu (D *blauw*) 'blue' (Smith and Huttar 1984, p. 25)
blomíki (D *blommetje*) 'flower' (Smith and Huttar 1984, p. 25)

(254) /dr/:
dri (D *drie*) 'three' (Smith and Huttar 1984, p. 25)
(255) /kl/:
klíki (E *creek*) 'creek' (Smith and Huttar 1984, p. 25)
(256) /gl/:
glási (E *glass* / D *glas*) 'glass' (Smith and Huttar 1984, p. 25)
(257) /gr/:
grási (E *grass* / D *gras*) 'grass' (Smith and Huttar 1984, p. 25)

Given the extremely reduced size of the corpus, absolute figures are, perhaps, of limited relevance. The fact remains, however, that the number of lexical items with unepenthesized obstruent + liquid clusters exceeds that of epenthesized forms. Notice also that two of the former, *dri* and *grási*, preserve the rhotic liquid in the etymon. The form *dri*, appears to be a competing alternative variant of the form with an epenthesized obstruent + liquid onset cluster *dilí* in (250).

In addition, in one form there occurs a new cluster:

(258) /pl/:
pla:sa (P *paliçada*) 'stockade' (Smith and Huttar 1984, p. 25)

Smith and Huttar (1984) admit that the case of Kwinti constitutes a puzzle on the assumption that "Kwinti [is] *unique* among the Bush Negro languages in retaining the liquids in initial clusters – possibly with optional epenthesis [emphasis added]". In fact, neither the existence of unepenthesized obstruent + liquid onset clusters nor the occasional occurrence of the rhotic liquid /r/ is exclusively typical of Kwinti. Recall, from section **4.2.4**, that unepenthesized obstruent + liquid onset clusters also occur in the closely related Aluku, in late 19th century records, as well as in the cult languages Kumanti and Yooka, which have been shown to preserve archaic forms. As for the [l] ~ [r] variation, again it is found not only in late 19th century Aluku, but also in Kumanti and Yooka. All this disconfirms Smith and Huttar's (1984, p. 27) claim that "Kwinti would be the only language with a divergence of development".

Smith and Huttar (1984, p. 27) also hypothesize that the existence of unepenthesized obstruent + liquid onset clusters may be due to Sranan since "Kwinti is under considerable influence from Sranan". Note, however, that on their own account "it [is] not entirely obvious *to what extent* the frequent occurrence of initial clusters [is] due to the influence of Sranan, or indeed *whether the very presence* of liquids [is] to be explained by this same factor [emphasis added]" (Smith and Huttar 1984, p. 29).

I conclude, therefore, that Kwinti too seems to have allowed obstruent + liquid onset clusters throughout its history.

4.2.6 Special case 2: Ndyuka

Modern Ndyuka does not allow obstruent + liquid onset clusters, and the liquid has been deleted between identical vowels, as can be seen from the examples in Huttar (1972), Huttar and Huttar (1994), and Goury (2003). Ndyuka also has a significant number of lexical items of West African origin, as shown by Huttar (1985). Under the circumstances, Ndyuka is potentially a good candidate for a creole that may have always had a basically CV syllable structure. According to Aceto (1996, p. 41), for instance, "Ndyuka is an English-derived Maroon creole which appears to have always contained a CV syllable template".

The potential start date for Ndyuka is 1712 (see e.g. Smith 1999a, p. 166, and Goury 2003, p. 19), a consequence of a mass escape of slaves who founded the Ndyuka tribe. According to Smith (1999a, p. 166), these slaves were speaking Sranan. In other words, "the split between Sranan and Ndyuka can be dated to 1712" (Smith 1999a, p. 166). As shown in section **4.2**, early Sranan appears to have allowed obstruent + liquid onset clusters. Recall that the earliest known occurrence of such a cluster dates from 1707, i.e. from before the separation of Sranan and Ndyuka in 1712. Moreover, other instances date from 1718, and they may be assumed to reflect the state of Sranan around the date of the split between Sranan and Ndyuka. Smith (1999a, p. 166) writes that "[a]ny linguistic features that [Sranan and Ndyuka] share – and these are very numerous – must have already been present at the time of separation". Similarly, if Sranan did indeed have obstruent + liquid onset clusters by the date of the split, it seems reasonable to assume that early Ndyuka too must have exhibited such clusters.

On the other hand, I have shown (in section **4.2.4**) that early Aluku appears to have allowed obstruent + liquid onset clusters, and that Kwinti still has such clusters (see **4.2.5**). Since both Aluku and Kwinti are offshoots of Ndyuka (second half of 18th century), this would again suggest that Ndyuka too initially allowed obstruent + liquid onset clusters.

Finally, consider the fate of the liquid. Thus, in the earliest records of Ndyuka, in epenthesized reflexes of the clusters at issue the liquid still occurs, even between identical vowels, as late as 1930. Note that the liquid /l/ is also found in various other phonological environments. Consider the examples below:

(259) /gr/:
    -1920 *galan* (P *grão*) 'big, grand' (Dubelaar and Pakosie 1988, p. 151)
(260) /dr/:
    1930 *dili* (D *drie*) 'three'
(261) -1920 *batala* (E *bottle*) 'bottle' (Dubelaar and Pakosie 1988, p. 151)
(262) early 20th c. *famili* (E *family*) 'family' (Goury 2003, p. 27)

The contemporary Ndyuka equivalents of the forms in (259)–(262) are: *gaan*, *dii*, *bataa*, and *famii* respectively. Loss of intervocalic /l/, then, appears to be a relatively recent phenomenon. This conclusion is supported by the fact that some Ndyuka forms still have variants with intervocalic /l/. Thus, while Alleyne (1980, p. 46) and De Groot (1984, p. 10) only list *baáki* (D *braak*) 'to vomit', Huttar and Huttar (1994) also mention the variant *balaki*, whereas Goury (2003, p. 62) and Anon. (2003a) only give a form with intervocalic /l/: *bàlàki* and *balaki* respectively. Finally, Goury (2003, p. 27) states that "dialectal variations [...] between the more and the less conservative varieties of Ndyuka [...] show that the position of the intervocalic liquid is *still not stabilized* [emphasis added]".

I assume, then, that anaptyxis into obstruent + liquid onset clusters is also a more recent phenomenon and does not, therefore, represent the initial stage. Epenthesis takes place sometime after the second half of the 18th century (i.e. after the separation of Aluku and Kwinti). It appears to have occurred earlier than in Aluku. This time differential could account for the more widespread loss of the now intervocalic liquid in Ndyuka, in contrast to the situation in Aluku[24] with its "latent" intervocalic liquid /l/ (Bilby 1993).

To sum up, I posit (*contra* Voorhoeve 1961, p. 103, Alleyne 1980, p. 46, Smith 1977, pp. 53–54 and 1987, p. 346, and Goury 2003, p. 55) the following developmental scenario for Ndyuka reflexes of obstruent + liquid onset clusters, with the relative chronology in (257), and the tentative absolute chronology in (258):

(263) stage I: *OLV > stage II. OVLV > stage III. OVV
(264) stage I: 1712
    stage II: after 2nd half of 18th c
    stage III: after 1930

The exact nature (rhotic or lateral) of the liquid in the initial stage is unknown, for lack of records. However, given comparative evidence from early Aluku (see section **4.2.4**), and also from early Saramaccan (see **4.2.3**), early Ndyuka too may have exhibited some [l] ~ [r] variation. At any rate, only /l/ occurs in the earliest

[24] See section **4.3.4**.

known records of Ndyuka, as in the examples (259)–(262) above. A form such as e.g. Ndyuka *fií* (E *free*) 'free', where *L* stands for an unspecified liquid, obtains as follows:

(265) **fLi* > *fili* > *fií*

If my hypothesis is correct, this would mean that Ndyuka has not always had an essentially CV syllable template, as is widely assumed in the literature. Incidentally, if in late 18th century Ndyuka obstruent + liquid onset clusters were still permitted, contact with Ndyuka cannot have been the reason why Saramaccan evolved to a CV syllable structure, as suggested by Aceto (1996, p. 41). The latter, as already mentioned, assumes that Ndyuka has always had a CV syllable template, and speculates that "speakers of Saramaccan may have been influenced by this prosodic feature".

4.2.7 The distribution of obstruent + liquid onset clusters in the early stages of the creoles of Surinam

To provide a general picture of the distribution of obstruent + liquid onset clusters in the English-based creoles of Surinam, I have set out in tables (266) and (267) forms recorded in at least three varieties.

(266) Obstruent + liquid onsert clusters in the creoles of Surinam

Sranan (first)	Saramaccan (first)	Aluku (first)	Kumanti (-1987)	Kwinti (1981)	etymon; gloss
blakke -1765-	*blakka* *brakka* 1778	–	–	*bláka*	(E *black*) 'black'
broke -1765-	*brokko* 1778	*broco* 1877	–	–	(E *broke*) 'to break'
kondre 1781	*kontri* 1778	*kõndre* 1952	–	–	(E *country*) 'village'
drie -1765-	*dri* 1778		–	*drí*	(D *drie*) 'three'
kry -1765-	*kre* 1778	*krei* 1952	–	–	(E *cry*) 'to cry'
kriekie 1798	*kriki* 1778	–	–	*klíki*	(E *creek*) 'creek'
glasi -1765-	–	*glasi* 1877	–	*glási*	(E *glass* / D *glas*) 'glass'
grasi	*-grasi* 1778	–	–	*grási*	(E *grass* / D *gras*) 'grass'
gron -1765-	*grun* 1778	*groom* 1877	*gron* -1987	–	(E *ground*) 'ground'

(267) New obstruent + liquid onset clusters in the creoles of Surinam

Sranan (first)	Saramaccan (first)	Aluku (earlier)	etymon; gloss
watre 1718	*watra* 1778	*watra* 1877	(E *water* / D *water*) 'water'
hondro 1783	*hondre* 1778	*hondro* 1877	(D *honderd*) 'hundred'
ningre 1770	*ningri* 1778	*neugre* 1877	(D *neger*) 'Negro'

4.2.8 The substrate languages of the English creoles of Surinam

Evidence lending support to the analysis outlined so far also comes from the substrate languages. According to Smith (1987, p. 346), "the two most important sources of African forms in the Surinam creoles [are] Gbe and Kikongo". Data on "[t]he source of Dutch slaves between the 1640s and 1700" show that "[t]wo thirds came from the ports of the Gbe-speaking Slave Coast, and one third came from the Congo and Angolan coast ports" (Smith 1987, p. 346)[25]. Somewhat later, "a significant number of the Slave Coast slaves came from wars between the Gbe and their eastern neighbours, especially the Yorubas" (Smith 1987, p. 347). This means that the relevant substrate languages are, in order, Gbe[26], Kikongo (and Kimbundu), and Yoruba[27]. Gbe, which was, significantly, "represented among the probable earliest slaves in Surinam [...] does admit [obstruent + liquid] clusters, at least in its modern form" (Smith 1987, p. 347), whereas Kikongo, Kimbundu and Yoruba do not, at least not in their present form.

On the assumption that the syllable structure and relevant phonotactic constraints of the substrate languages have not been subject to subsequent radical modifications, the picture that emerges is the following one. Speakers of Gbe would admittedly have had no reasons not to preserve obstruent + liquid onset clusters. As put by Smith (1987, p. 347), "many slaves – those of Gbe linguistic background – might have no problems producing these clusters". Recall that, importantly, speakers of Gbe are assumed to have amounted to some two thirds of the slaves in the very earliest stages of the emergence of the creoles of Surinam. Moreover, on Smith's (1987, p. 347) own account, "[t]he Yoruba would [...] probably have spoken at least some Gbe (learned in the slave depots)". In other words, at least some of the speakers of substrate languages disallowing the clusters at issue may also have been able to produce them.

In all fairness, there are two problems when positing influence of Gbe. One resides, as already mentioned, in the hypothesis that the syllable structure and phonotactic constraints of Gbe in the second half of the 17th century are identical with or very similar to those of present-day Gbe. No evidence has been produced in support of this assumption, unless one uses creoles to make a case for it. Obviously, argumentation would become circular. Moreover, as shown by Clements (2000)[28], in many varieties of Gbe current CLV [= consonant liquid vowel] sequences may originate in "historical bisyllabic sequences CVLV [= consonant liquid vowel] have become synchronically reanalyzed as a single CLV syllable".

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[25] See also Arends (1995), Parkvall (2000, pp. 125–126), and Migge (2003).
[26] Migge (2003) also considers Gbe to be the main substrate language of the creoles of Surinam.
[27] Plag and Uffmann (2000, p. 328) add Akan (Twi) but do not mention Yoruba.
[28] See Clements (2000, pp. 146–147) for details.

On the other hand, dismissing evidence from contemporary Gbe as irrelevant is not that simple. For instance, /l/ ~ /r/ variation could no longer be accounted for by invoking Gbe influence[29], since we do not know the status of the liquids (independent phonemes or allophones of one phoneme) in 17th century Gbe either. In addition, one might point to Haitian French, with a strong Gbe substratal input, which also appears to have allowed obstruent + liquid onset clusters throughout its history. Note that the English creoles of Surinam and Haitian essentially share the substrate languages, Gbe[30] and Bantu. Therefore, the influence of the former may explain why obstruent + liquid onset clusters occur in both types of creoles.

With due reservations then, the sociohistoric data about the demographic and linguistic make up of the earliest slaves in Surinam would not be out of line with my analysis, presented in **4.2.2** through **4.2.7**, which posits the preservation of obstruent + liquid onset clusters in the earlier stages of the creoles of Surinam.

4.2.9 Obstruent + liquid onset clusters in the early stages of the creoles of Surinam: conclusions

The findings with respect to the earlier stages of the creoles of Surinam can be summarized as follows.

Obstruent + liquid onset clusters did occur in at least some of the English creoles of Surinam, i.e. early Saramaccan, early Aluku, and, most likely, early Ndyuka, and are still allowed in Sranan and Kwinti. In optimality-theoretic terms, I assume the structural constraint *ONS/OL, defined as follows:

(268) ***ONS/OL**: clusters of obstruent and liquids are disallowed in onset position.

This constraint must have been dominated by DEP-IO and ranked low in the hierarchy in the initial stages of the creoles of Surinam:

(269) MAX-IO, DEP-IO, LEFT-ANCHOR, CONTIGUITY >> *ONS/OL

The phonetic realization of obstruent + liquid clusters in the source languages, e.g. English, Portuguese and Dutch, is not a factor determining the reflexes of these clusters in the creoles at issue.

The essentially CVCV canonical structure appears to be a later development in Saramaccan (see also Aceto 1996, p. 35), Aluku and Ndyuka. The canonical CV syllable structure has not always been typical of the so-called "radical" creoles, such as Saramaccan or Ndyuka, as assumed by e.g. Parkvall (2000, p. 53). Quantitative

[29] Parkvall (2000, p. 151)
[30] See, however, Smith (2001).

analyses of syllable types based exclusively on contemporary varieties (e.g. Stolz 1986, Ericsson and Gustafson-Čapkova 1997) are therefore misleading since they ignore the diachronic perspective.

Finally, two side issues need to be addressed here. First, as has been shown, at a later stage in the development of several creoles of Surinam, obstruent + liquid onset clusters are no longer permitted. A case could be made for considering their prohibition as part of the conspiracy to maximize CV syllable structure. However, two non-trivial problems remain unsolved. A change from OLV, a marked syllable structure, to OVLV, an unmarked one, is expected to occur in the very first stages of pidgins or creoles, and not later (see also Aceto 1996, p. 41). In creoles, later stages are rather associated with changes from unmarked to marked structures.

Second, epenthesis of obstruent + liquid onset clusters is followed in some of the creoles of Surinam by the deletion of /l/, now in intervocalic position. Deletion of intervocalic /l/ is not, however, restricted to such cases. There is independent evidence for this phenomenon. Consider e.g. Saramaccan *kaai* 'to call' (Betian & al 2000, p. 78), from E *call*, or Ndyuka *sikóo* (De Groot 1984, p. 89), from Dutch *school*. This change is a case of intervocalic weakening (Hyman 1974, p. 165) or lenition, i.e. the last step in the phonological strength hierarchy: approximant > zero (see e.g. Lass 1984, p. 177, and Katamba 1993, p. 104). The intervocalic position is a "prime weakening environment" (Lass 1984, p. 181). The change thus qualifies as a natural one.

4.3 Modern Atlantic English pidgins and creoles

4.3.1 Ghanaian Pidgin English

According to Huber (1999b, p. 171), Ghanaian Pidgin English allows obstruent + liquid clusters in the onset. However, "only /p, t, k, f, s, ʃ, h/ may be the first consonants in a syllable-initial CC cluster" (Huber 1999b, p. 171), and lists the following possible obstruent + liquid onset clusters: C_1C_2: /pr/, /kr/, /fr/, /pl/, /kl/, /fl/, /tr/, /ʃr/ (Huber 1999b, p. 172). Note, incidentally, that two more clusters, /br/ and /gr/, are in fact attested in Huber's samples of Ghanaian Pidgin English.

On the other hand, according to Huber (1999b, p. 172), in Ghanaian Pidgin English "consonant clusters are frequently simplified [...] especially towards the basilectal end of the continuum". The strategy for the resolution of illicit onset clusters is epenthesis. As for the nature of the epenthetic vowel, Huber (1999b, p. 174) writes that "in epenthesis the tone-bearing vowel of the syllable containing the cluster is copied and inserted between two consonants", as in the examples below:

(270) /pl/:
[p^{e}les] (E *place*) 'place' (Huber 1999, p. 174)

(271) /kl/:
[k^{ɔ}lɔf] (E *cloth*) 'cloth' (Huber 1999, p. 174)

(272) /tr/:
[t^{u}ru] (E *true*) 'true' (Huber 1999b, p. 174)

The constraint ensuring the selection of the epenthetic vowel is COPY. The hierarchy of constraints is:

(273) *ONS/OL, MAX-IO, LEFT-ANCHOR, COPY >> DEP-IO, CONTIGUITY

The interplay of the constraints, determining the choice of e.g. [tu.ru] (E *true*) 'true', is illustrated by the evaluation in table (274):

(274)

/tru:/	*ONS/OL	MAX-IO	L-ANCHOR	COPY	DEP-IO	CONTIG
tru	*!					
tu		*!				
ru		*!	*			
ut.ru			*!		*	
ti.ru				*!	*	*
☞ tu.ru					*	*

The situation may be somewhat different in what Huber (1999b, p. 284) calls "minimal", "broken" or "jargonized Ghanaian Pidgin English". In the resolution of illicit onset clusters of the type obstruent + liquid, this variety appears to resort to the default epenthetic vowel [i]. Consider the example below:

(275) /pl/
pilante (E *plenty*) 'a lot' (Huber 1999b, p. 284)

Since COPY plays no part, the relevant constraint hierarchy is:

(276) *ONS/OL, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

The evaluation in table (277) demonstrates the correctness of the ranking:

(277)

/plenti/	*ONS/OL	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
plan.te	*!				
pan.te		*!			
lan.te		*!	*		
ip.lan.te			*!	*	
☞ pi.lan.te				*	*

Basilectal and respectively jargonized Ghanaian Pidgin English appear then to differ as far as the selection of the epenthetic vowel is concerned.

4.3.2 Yoruba Nigerian Pidgin English

The variety of Nigerian Pidgin English spoken by the Yorubas, described by Barbag-Stoll (1983), is another Atlantic variety in which obstruent + liquid onset clusters are disallowed and are subject to vowel epenthesis. Consider the examples below:

(278) /bl/
/bulod/ (E *blood*) 'blood' (Barbag-Stoll 1983, p. 65)
/bulɔ/ (E *blow*) 'blow' (Barbag-Stoll 1983, p. 65)
(279) /fl/
/filag/ (E *flag*) 'flag' (Barbag-Stoll 1983, p. 65)
(280) /fr/
/firem/ (E *frame*) 'frame' (Barbag-Stoll 1983, p. 65)
(281) /tr/
/tiri/ (E *tree*) 'tree' (Barbag-Stoll 1983, p. 66)
(282) /dr/
/dirink/ (E *drink*) 'to drink' (Barbag-Stoll 1983, p. 65)
(283) /kl/
/okulok/ (E *o'clock*) 'clock' (Barbag-Stoll 1983, p. 65)

Let me now turn to what appears to determine the selection of the epenthetic vowel, which Barbag-Stoll (1983) does not discuss in her chapter on the phonology of Yoruba Nigerian Pidgin English. First, two of Barbag-Stoll's (1983) examples, /filag/ and /firem/, suggest that [i] is the default epenthetic vowel. Alternatively, if there is a [LABIAL] vowel, the selected epenthetic vowel is [u], also a [LABIAL] vowel, as in /bulɔ/, /bulɔd/, and /okulok/. In other words, the latter forms exemplify epenthesis with vowel harmony. Note that alternative analyses can be discarded. First, it cannot be the case that an /r/ in the cluster selects an epenthetic [i], whereas an /l/ requires an epenthetic [u]. This would be phonetically implausible. In addition, /filag/ is a clear counterexample. Second, epenthetic [u] does not seem to be imposed, via transcategorial progressive assimilation, by a preceding [LABIAL] consonant. This would account for /bulɔ/ and /bulɔd/. But, in /okulok/, /k/ is not a [LABIAL] consonant and yet [u] is the epenthetic vowel. Two forms, /tiri/ and /dirink/, exhibit either default [i] or vowel copying.

Instances involving the default epenthetic vowel [i] can be handled by the following ranking of constraints:

(284) *ONS/OL, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

The evaluation is exemplified in tableau (285):

(285)

/freim/	*ONS/OL	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
frem	*!				
fem		*!			
rem		*!	*		
if.rem			*!	*	
☞ fi.rem				*	*

Forms illustrating vowel harmony, are accounted for by the constraint HARMONY. The constraint hierarchy is:

(286) *ONS/OL, MAX-IO, LEFT-ANCHOR, HARMONY >> DEP-IO, CONTIGUITY

Consider the evaluation in the tableau below:

(287)

/bləʊ/	*ONS/OL	MAX-IO	L-ANCHOR	HARM	DEP-IO	CONTIG
blɔ	*!					
bɔ		*!				
lɔ			*!			
ub.lɔ			*!		*	
bi.lɔ				*!	*	*
☞ bu.lɔ					*	*

4.3.3 Assimilated Cameroon Pidgin English

The empirical data from Assimilated Cameroon Pidgin English present a rather straightforward picture. This conservative variety of Cameroon Pidgin English epenthesizes a vowel to break up obstruent + liquid onset clusters in the etyma (see also **Appendix 13**):

(288) /pl/
piles (E *place*) 'place'(Schneider 1966, p. 219)

(289) /br/
bilok (E *broke*) 'to break' (Scheider 1966, p. 228)

(290) /θr/
tilowey (E *throw away*) 'to throw' (Schneider 1966, p. 227)

(291) /tr/
tilay (E *try*) 'to try' (Schneider 1966, p. 219)

(292) /kr/
kilas (E *scratch*) 'to scratch' (Schneider 1966, p. 227)

(293) /gl/
gilat[31] (E *glad*) 'pleased' (Schneider 1966, p. 225)

(294) /gr/
hongili (E *hungry*) 'hungry' (Schneider 1966, p. 219)

The examples above clearly show that Assimilated Cameroon Pidgin English resorts to the default epenthetic vowel [i] in the resolution of the illicit onset clusters

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[31] The occurrence of [t] in *gilat* (< E *glad*) is an instance of obstruent devoicing in word-final position, typical of Cameroon Pidgin English in general (see Todd 1984, p. 163).

at issue[32]. The ranking of constraints is:

(295) *ONS/OL, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

Consider the evaluation in tableau (296), given the input /glæd/:

(296)

/glæd/	*ONS/OL	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
glat	*!				
gat		*!			
lat		*!	*		
ig.lat			*!	*	
☞ gi.lat				*	*

4.3.4 Modern Aluku

Modern Aluku is one of the least documented creoles of Surinam. The analysis hereafter is based on data from Smith (1977a), Hurault's (1983) comprehensive vocabulary, and from Bilby (1993).

Consider first the data in Hurault (1983), based on the author's fieldwork in 1952, and those in Smith (1977a and 1977b). Mention should be made of the fact that N. Smith, an authority on the creoles of Surinam, praises in the foreword, the exceptional quality of the data and of the painstaking transcription in Hurault (1983).

Etyma with obstruent + liquid onset clusters have a variety of reflexes. First there are isolated instances of unepenthesized clusters:

(297) /pr/
pr̩ospẹk (F *prospecter*) 'to prospect' (Hurault 1983, p. 27)

(298) /fl/
fraga (E *flag*) 'flag' (Hurault 1983, p. 11)

(299) /tr/
kõndre (E *country*) 'nation, tribe; country, village' (Hurault 1983, p. 21)

(300) /kr/
krei (E *cry*) 'to cry' (Hurault 1983, p. 25)

Of these, *pr̩ospẹk* can safely be disregarded, since it is obviously a recent borrowing from French, as shown by the fact that it ends in a [-nasal] consonant, in violation of the CODACOND of Aluku, which only allows [+nasal] consonants in the coda. A second form, *fraga*, seems to be a Sranan-influenced variant. According to Bilby (1993, p. 32, note 5), the actual Aluku form is *faaka*. The remaining two words however, *kõndre* and *krei* are significant in that they are illustrative of the earlier stages of the language, which, as shown in **4.2.4**, appear to have permitted obstruent + liquid onset clusters. As such, these forms may be considered relics. This conclusion

[32] This statement can be, in fact, generalized. In this pidgin, [i] is the default epenthetic vowel, since it also breaks up /s/-initial onset clusters, as shown in chapter **3**, section **3.3.4.2**.

is somewhat supported by the existence, in the case of the reflex of E *cry*, of a competing, epenthesized variant *kerẹi* (see below).

A number of forms appear to illustrate reduction of obstruent + liquid onset clusters via liquid deletion[33] (see also **Appendix 14**):

(301) /pl/
pelaa (F *prélart*) 'tarpaulin' (Hurault 1983, p. 3)
(302) /br/
kabita (P *cabrita*) 'kid (of the goat)' (Hurault 1983, p. 6)
(303) /θr/
tọwẹ (E *throw away*) 'to throw away' (Hurault 1983, p. 18)
(304) /tr/
tobi (E *trouble*) 'to trouble, to annoy' (Hurault 1983, p. 16)
(305) /dr/
dai (D *draaien*) 'to turn' (Hurault 1983, p. 31)
(306) /kr/
kaši-kaaši (E *scratch*) 'rash' (Hurault 1983, p. 15)
(307) /gl/
ogi (E *ugly*) 'evil' (Hurault 1983, p. 20)

Recall that, as mentioned in **4.2.4**, the section on early Aluku, there is no evidence, to the best of my knowledge, for an alternative, possible route that would presuppose epenthesis with vowel copying and subsequent deletion of the first identical vowel. As will be seen below, clearly epenthesized reflexes of etyma with obstruent + liquid onset clusters evince a sequence of two identical vowels or, on a different analysis, a long vowel[34].

There is just one form in which the original rhotic liquid /r/ has turned into the palatal glide /j/:

(308) /gr/
gyebi (E *grave*) 'grave' (Hurault 1983, p. 8)

The vast majority of the reflexes of etyma with obstruent + liquid onset clusters are instances of epenthesis. The transcription system in Hurault (1983) suggests that these are subdivided into two classes. A first such class, apparently smaller, consists of forms in which the epenthetic vowel is phonetically shorter than any of the other vowels in the word. Consider the 6 examples below:

(309) /pl/
p^{a}andi (E *plant*) 'to plant' (Hurault 1983, p. 25)
(310) /pr/
p^{a}aksẹli (D *prakkezeren* 'to think') 'idea' (Hurault 1983, p. 32)

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[33] Mühlhäusler (1986, p. 142, and 1997, p. 134) wrongly claims that Aluku "contains numerous examples of cluster simplification by means of omission [= liquid deletion]".
[34] Their phonological interpretation is a controversial issue. See Bilby (1993, p. 27).

(311) /tr/
t^{a}*ãnga* (E *strong*) 'strong; hard; difficult' (Hurault 1983, p. 12)
(312) /kl/
k^{ọ}*lọ* (Ewe *klò*, Ge *è-kló*, Gu *òklo*) 'turtle' (Hurault 1983, p. 31)
(313) /kr/
k^{e}*rẹi* (E *cry*) 'to cry' (Hurault 1983, p. 25)
(314) /gr/
g^{a}*ã* (P *grão*) 'superior, old' (Hurault 1983, p. 16)

Notice in this class the occurrence of *kerẹi*, along the unepenthesized variant *krei* already discussed.

The second class, much larger, consists of 35 items with an epenthetic vowel whose duration does not appear to be significantly shorter than that of other vowels in the word (see also **Appendix 14**):

(315) /pl/
paãnga (E/D *plank*) 'board' (Hurault 1983, p. 25)
(316) /pr/
poolọ (E *proud*) 'to dress up' (Hurault 1983, p. 23)
(317) /bl/
baaka (E *black*) 'black' (Hurault 1983, p. 22)
(318) /br/
baạla (E *brother*) 'brother' (Hurault 1983, p. 15)
(319) /fl/
fạạu (D *flauw* 'weak, faint') 'to swoon' (Hurault 1983, p. 13)
(320) /fr/
fẹẹle (E *afraid*) 'afraid' (Hurault 1983, p. 10)
(321) /θr/
tuúsu (E *thrust*) 'to thrust' (Smith 1977a, p. 19)
(322) /tr/
tuu (E *true*) 'truth; true' (Hurault 1983, p. 33)
(323) /dr/
dẹẹ (E *dry*) 'dry' (Hurault 1983, p. 29)
(324) /kl/
kiin (E *clean*) 'clean' (Hurault 1983, p. 6)
(325) /kr/
kaạbu (E *crab* / D *krab*) 'crab' (Hurault 1983, p. 9)
(326) /gl/
gaaši (E *glass* / D *glas*) 'glass' (Hurault 1983, p. 32)
(327) /gr/
giíli (E *greedy*) 'greedy' (Hurault 1983, p. 16)

Whatever the phonetic distinctions between the epenthetic vowel in the two classes of words, epenthesis involves vowel copying.

Finally, recall that, as shown in **4.2.4**, in some of the late 19th century Aluku forms displaying vowel epenthesis, there is still a trace of the original liquid, /l/ or /r/, in the obstruent + liquid onset cluster. Interestingly, Bilby (1993, p. 27) reports that in modern Aluku "[i]n normal speech, liquids were sometimes "re-einserted" into environments from which they were usually absent"[35]. More exactly, "[l]ong vowels (or rather, "double vowels" consisting of two like vowels) sometimes undergo a process of syllabification owing to the occasional insertion of a liquid (in all cases /l/) in a medial position" (Bilby 1993, p. 27). He states explicitly that "this process appears to be optional" and coins the term "latent intervocalic liquids" (Bilby 1993, p. 27). Consider the examples below (one per etymological cluster):

(328) /pl/
pee ~ *pelé* (E *play*) 'to play' (Bilby 1993, p. 27)

(329) /pr/
poolo ~ *polólo* (E *proud*) 'proud' (Bilby 1993, p. 28)

(330) /bl/
booko ~ *bolóko* (E *broke*) 'to break' (Bilby 1993, p. 28)

(331) /br/
beele ~ *beléle* (E *bread*) 'bread'

(332) /fl/
fee ~ *felé* (E *fly*) 'to fly' (Bilby 1993, p. 27)

(333) /fr/
feele ~ *feléle* (E *afraid*) 'afraid' (Bilby 1993, p. 28)

(334) /tr/
tuu ~ *tulú* (E *true*) 'true' (Bilby 1993, p. 27)

(335) /dr/
daai ~ *dalái* (D *draaien*) 'to turn' (Bilby 1993, p. 28)

(336) /kl/
kiin ~ *kilín* (E *clean*) 'clean' (Bilby 1993, p. 28)

(337) /kr/
kee / *kyee* ~ *kelé* / *kyelé* / *kéle* (E *cry*) 'to cry' (Bilby 1993, p. 27)

(338) /gl/
gaata ~ *galáta* (D *glad*) 'smooth' Bilby (1993, p. 28)

(339) /gr/
gaan ~ *galán* (P *grão*[36]) 'big' Bilby (1993, p. 28)

It is not clear why or how these "latent intervocalic liquids" went totally unnoticed by Hurault in his fieldword conducted in 1952. At any rate, their occurrence as late as the 1980s, is indicative of the slow, gradual loss in Aluku of this reflex [l]. The loss of [l] then is relatively recent and, moreover, this change seems not to have run its course. This is therefore additional, though admittedly circumstantial, evidence in favour of my hypothesis positing that obstruent + liquid onset clusters were initially permitted in Aluku, as suggested by the examples containing such

[35] The data in Bilby (1993) are from the author's fieldwork in 1978.
[36] This etymon is more plausible than P *grande*, suggested by Bilby (1993, p. 28). Cf. Aceto (1996, p. 31).

clusters listed in **4.2.4**. My analysis is anyway not essentially dependent on the fate of this so-called "latent intervocalic" [l][37].

As Aluku seems to have always disallowed [-nasal] consonants in coda position, the hierarchies below include the constraint *ORALCODA. The present-day epenthesized reflexes of obstruent + liquid onset clusters in Aluku illustrate reranking of constraints:

(340)initial: MAX-IO,DEP-IO,LEFT-ANCHOR,CONTIGUITY, *ORALCODA >> *ONS/OL
reranking:*ONS/OL,MAX-IO,LEFT-ANCHOR,*ORALCODA>>DEPIO,CONTIGUITY

Since the epenthethis always involves vowel copying, the constraint hierarchy obtaing from reranking needs to be supplemented with the constraint COPY:

(341) *ONS/OL,MAX-IO, LEFT-ANCHOR, *ORALCODA, COPY>>DEP-IO, CONTIGUITY

Compare, in (342) and (343), the reflexes of e.g. E *broke* in 1877 Aluku and in the contemporary variety, i.e. *broko* and *bo(l)óko* respectively:

(342)

/brəʊk/	MAX-IO	L-ANCHOR	DEP-IO	CONTIG	*ORALCODA	*ONS/OL
☞ bro.ko						*
bo.ko	*!					
ro.ko	*!	*!				
bo.ro.ko			*!	*		
ob.ro.ko		*!	*		*	

(343)

/brəʊk/	*ONS/OL	MAX-IO	L-ANCHOR	COPY	*ORALCODA	DEP-IO	CONTIG
blo.ko	*!						
bo.ko		*!					
lo.ko		*!	*				
ob.lo.ko			*!		*	*	
bi.lo.ko				*!		*	*
☞ bo.lo.ko						*	*

4.4 Early Pacific English pidgins and creoles
4.4.1 Introduction

In this section I only discuss the reflexes of obstruent + liquid onset clusters. On currently available evidence, it is not clear whether obstruent + glide onset clusters are subject to any adjustment in the early stages of the pidgins and creoles at issue. Consider first the case of early Tok Pisin. Murphy (1966, p. 3)[38] writes that "[w]hen the consonants appear in these pairs [...] KW, they are pronounced as if an unaccented "i" were between each pair of consonants". However, in his rather carefully

[37] Whether the /l/ surfaces or not is irrelevant to the ranking argument.
[38] This is the second edition of the book, reproducing the first one, published in 1943. It therefore presents the Tok Pisin of the 1940s.

transcribed samples I have not found one single occurrence of an epenthesized reflex of the onset cluster /kw/. What I have found are only examples illustrating the retention of the cluster, such as:

(344) /kw/
1943 *kwik* (E *quick*) 'quickly' (Murphy 1966, p. 78)

Having sifted through the attestations of early Bislama in Crowley (1993) and especially in Crowley (1998), I identified only two instances which might be indicative of an adjustment of onset clusters of the type C+w. One such example is the following:

(345) /tw/
-1899 *touaneté* (E *twenty*) 'twenty' (Crowley 1998, p. 102)

This may be a case of vocalization of the /w/ in the etymon. Assuming vocalization of /w/ has the advantage, on typological grounds, that the phenomenon does occur cross-linguistically. However, given the French-based system of transcription[39], the question of whether the digraph ou stands for [u] or rather for the glide [w][40] cannot be, I think, satisfactorily settled.

The second example, from the same source, is reproduced below:

(346) /kw/
-1899 *quike* (E *quick*) 'quickly' (Crowley 1998, p. 83)

Again, this example appears at first sight to show that the original onset cluster is tampered with. Notice, however, three problems. First, the transcriber may well have not known how to graphically render the cluster /kw/. Second, if one assumes that the transcription faithfully renders the pronunciation, presumably [kik], it would mean that such clusters are simplified via deletion of /w/. But then, why is /w/ not deleted in the form *touaneté* "twenty" as well? Third, deletion of the /w/ in C+w onset clusters is not, to the best of my knowledge, a common strategy for the resolution of such illicit clusters (while vocalization of /w/ is).

Finally, consider early Kriol. Sandefur (1979, p. 39) states that "[i]n clusters involving two consonants at the beginning of a syllable", when "the second consonant was a [...] semiconsonant, a vowel was inserted between the two consonants". Again, as in the case of early Tok Pisin mentioned above, no examples are provided. Quite on the contrary, Sandefur's own examples, such as the one below, illustrate the retention of the onset cluster C+w:

[39] The transcriber is Père Pionnier, a French missionary, who apparently spoke little or no English. See Crowley 1993) and **4.4.3**.
[40] As in F *ouate* [wat] 'cotton'.

(347) /kw/
/kwikbala/ (E *quick, fellow*) 'quick(ly)' (Sandefur 1979, p. 101)

Given the conflicting evidence and/or the unreliable transcriptions, I leave open the question of C+w onset clusters and move on to the issue of the reflexes of obstruent + liquid onset clusters in early Pacific pidgins and creoles.

4.4.2 Tok Pisin

There is unanimous agreement on the treatment of obstruent + liquid onset clusters in earlier stages of Tok Pisin. According to Hall (1943, p. 15), "[t]here is a basic difference between English and Melanesian speakers in their pronunciation of these clusters" in that "[these] clusters are pronounced by [Melanesian speakers] as consonant + unaccented vowel + consonant" (Hall 1943, pp. 15–16). Murphy (1966, p. 3) also notes that "[w]hen the consonants appear in these pairs [...] TR, BL, BR, Pl, PR, KL, KR [...], they are pronounced as if an unaccented "i"were between each pair of consonants? However, as noted by among others Mosel (1980, p. 19), "[s]ome Pidgin words, e.g. [...] **pelet** *plate*, probably belong to the common stock of South Pacific words and had already got a stabilised form, before Tok Pisin developed"[41].

Consider the following examples (see also **Appendix 15**):

(348) /pl/
1943 *palayas* (E *pliers*) 'pliers' (Murphy 1966, p. 143)
(349) /pr/
1943 *koropela* (E *propeller*) 'propeller' (Murphy 1966, p. 76)
(350) /bl/
1943 *bilak* (E *black*) 'lack' (Murphy 1966, p. 61)
(351) /br/
1943 *baraidel* (E *bridle*) 'bridle' (Murphy 1966, p. 112)
1943 *boret*[42] (E *bread*) 'bread' (Murphy 1966, p. 57)
(352) /fl/
1943 *bilas* (E *flash*) 'decoration; decorated; to show off' (Murphy 1966, p. 62)
(353) /fr/
1943 *paraide* (E *Friday*) 'Friday' (Murphy 1966, p. 126)
(354) /θr/
1943 *toraut* (E *throw, out*) 'to vomit' (Murphy 1966, p. 100)
(355) /tr/
1943 [s:tə'ret] (E *straight*) 'straight' (Hall 1943, p. 16)
1949 *sitaret* (E *straight*) 'straight' (Mosel 1980, p. 19)
(356) /dr/
1943 *darai* (E *dry*) 'dry' (Murphy 1966, p. 64)
(357) /kl/
1943 *karamsel* (E *clams*) 'clams' (Murphy 1966, p. 73)

---

[41] Cf. Schuchardt's (1883/1980, p. 22) Melanesian Pidgin English form *pellate* 'plate'
[42] Voiced stops in the etyma are devoiced in word-final codas (Todd 1984, p. 163).

(358) /kr/

1949 *karanki* (E *cranky*[43]) 'strong, incorrect' (Mosel 1980, p. 19)

(359) /gl/

1943 *galas* (E *glass*) 'glass' (Murphy 1966, p. 127)

(360) /gr/

1943 *giraun* (E *ground*) 'ground' (Murphy 1966, p. 67)

Clearly, obstruent + liquid onset clusters are disallowed in early Tok Pisin. The resolution of such illicit clusters involves just one strategy, vowel epenthesis.

Consider next the issue of the nature of the epenthetic vowel. According to Hall (1943, p. 16), "[t]he vowel thus pronounced between the consonants varies regionally", and is either [ə] or [i]. Similarly, Murphy (1966, p. 3) states that reflexes of obstruent + liquid onset clusters "are pronounced as if an unaccented "i" were between each pair of consonants". However, the examples above falsify these statements, since they clearly show that the epenthetic vowel is not always the same. The choice seems to be basically between a copy of the first vowel to the right and a default vowel, some sort of [i]. The status of [i] as an epenthetic vowel is clearly shown by the coexistence of alternate forms such as the reflexes of E *true*: *turu* and *tiru*. Of the 56 forms, 36 exhibit vowel copying and 16 the default epenthetic vowel (plus one, *pelasta*, which has [e], presumably a variant). Note that only non-ambiguous cases involving the default epenthetic vowel are counted as such, e.g. *kilok*. Ambiguous cases, such as *kilia*, which could be illustrations of either vowel copying or of the default epenthetic vowel, are treated here as examples of vowel copying.

Epenthesis with vowel copying can be dealt with by assuming the undominated constraint COPY and the constraint hierarchy in (361):

(361) *ONS/OL, MAX-IO, LEFT-ANCHOR, COPY >> DEP-IO, CONTIGUITY

Here is the evaluation of the candidates, given e.g. the input /drai/:

(362)

/drai/	*ONS/OL	MAX-IO	L-ANCHOR	COPY	DEP-IO	CONTIG
drai	*!					
dai		*!				
rai		*!	*			
ad.rai			*!		*	
di.rai				*!	*	*
☞ da.rai					*	*

The hierarchy of constraints in (363) accounts for the forms exhibiting the default

[43] Mosel (1980, p. 19) indicates G *krank* 'ill' as the etymon. However, I follow Steinbauer (1969, p. 51) and assume that E *cranky* is the etymon. Notice that dialectal E *cranky* also has the meaning 'crazy, imbecile', which comes close to the gloss in Murphy (1966, p. 73).

epenthetic vowel [i]:

(363) *ONS/OL, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

Consider the evaluation in the following tableau:

(364)

/blæk/	*ONS/OL	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
blak	*!				
bak		*!			
lak		*!	*		
ib.lak			*!	*	
☞ bi.lak				*	*

Two forms, *boret* and *poreit*, are examples of transcategorial progressive assimilation of the C-to-V type. That is, the [LAB] consonants /b/ and /p/ respectively impose the selection of a [LAB] epenthetic vowel. To account for this I propose the constraint C_{LAB}-V_{LAB}, defined as follows:

(365) **C_{LAB}-V_{LAB}**: insert a [LAB] vowel between a [LAB] obstruent and the liquid.

The constraint C_{LAB}-V_{LAB} must obviously outrank DEP-IO in the hierarchy of constraints:

(366) *ONS/OL, MAX-IO, LEFT-ANCHOR, C_{LAB}-V_{LAB} >> DEP-IO, CONTIGUITY

As shown in the evaluation below, [boret] emerges as the optimal output form:

(367)

/bred/	*ONS/OL	MAX-IO	L-ANCHOR	C_{LAB}-V_{LAB}	DEP-IO	CONTIG
bret	*!					
bet		*!				
ret		*!	*			
ib.ret			*!		*	
bi.ret				*!	*	*
☞ bo.ret					*	*

I have no principled explanation for the epenthetic *a*, presumably [a], in the one remaining form *sitaret*.

Early Tok Pisin, then, does not permit obstruent + liquid onset clusters. There is variability in the nature of the epenthetic vowel: vowel copy of the first vowel to the right, default [i], and occasional transcategorial assimilation to a preceding [LAB] consonant. This reflects the variability of early pidgins, as proved by the similar situation in the closely related Bislama (see **4.4.3**) and Solomon Islands Pidgin (see **4.4.4**).

4.4.3 Bislama

The examples from early Bislama are from Crowley (1993 and 1998). As for the dates of the attestations, they are based on Crowley (1998, pp. 62–63).

Unfortunately, many of the earlier records of Bislama are often rendered in an anglicized version. The forms collected and transcribed by Père Pionnier are an important exception, since this French missionary seems to have spoken little or no English. An attempt at "etymologizing" transcriptions is therefore less likely in his case[44].

In the samples in Crowley (1993) and, especially, Crowley (1998), I have identified a number of what appear to be more faithful renderings of early Bislama reflexes of obstruent + liquid onset clusters in the etyma (see also **Appendix 16**):

(368) /pr/
-1919 *copperah* (E *copra*) 'copra' (Crowley 1998, p. 82)
(369) /fr/
-1899 *forailleray* (E *Friday*) 'Friday' (Crowley 1998, p. 73)
(370) /tr/
-1927 *steraight* (E *straight*) 'straight' (Crowley 1998, p. 98)
(371) /dr/
-1919 *derrown* (E *drown*) 'to drown' (Crowley 1998, p. 73)
(372) /gl/
-1919 *Ingerlish* (E *English*) 'English' (Crowley 1998, p. 79)
(373) /gr/
-1899 *guirisse* (E *grease*) 'fat' (Crowley 1993, p. 217)

As can be seen from the examples above, early Bislama resorts to vowel epenthesis. As for the nature of the epenthetic vowel, the preferred solution seems to have been a default vowel. The epenthetic vowel seems to have been [e]. The constraint hierarchy is:

(374) *ONS/OL, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

Consider the evaluation in the following tableau:

(375)

/draʊ n/	*ONS/OL	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
draun	*!				
daun		*!			
raun		*!	*		
ed.raun			*!	*	
☞ de.raun				*	*

The adjustment of one form, *guirisse*, appears to illustrate epenthesis with vowel copying. The corresponding hierarchy of constraints therefore includes COPY:

(376) *ONS/OL, MAX-IO, LEFT-ANCHOR, COPY >> DEP-IO, CONTIGUITY

Tableau (377) shows the interplay of these constraints:

[44] See also Crowley (1993) and Avram (2000c).

(377)

/gri:s/	*ONS/OL	MAX-IO	L-ANCHOR	COPY	DEP-IO	CONTIG
gris	*!					
gis		*!				
ris		*!	*			
ig.ris			*!		*	
ge.ris				*!	*	*
☞ gi.ris					*	*

One last form, *forailleray*, presumably [forairai], exemplifies transcategorial progressive assimilation of the C to V type. The [LAB] vowel [o] is selected since the first consonant in the obstruent + liquid onset cluster in the etymon is /f/, a [LAB] consonant. The constraint hierarchy is:

(378) *ONS/OL, MAX-IO, LEFT-ANCHOR, C_{LAB}-V_{LAB} >> DEP-IO, CONTIGUITY

Tableau (379) evaluates the competing candidates in light of the ranking suggested:

(379)

/fraɪdei/	*ONS/OL	MAX-IO	L-ANCHOR	C_{LAB}-V_{LAB}	DEP-IO	CONTIG
frai.rai	*!					
fai.rai		*!				
rai.rai			*!			
ef.rai.rai			*!		*	
fe.rai.rai				*!	*	*
☞ fo.rai.rai					*	*

In conclusion, the scant data seem to indicate that early Bislama favoured default epenthetic vowels in the resolution of illicit obstruent + liquid onset clusters. Occasionally, vowel copying and transcategorial assimilation of the epenthetic vowel also occur. Such variability is not at all suprising, given the unstable nature of early pidgins. Recall that all these three phenomena are also attested in early Tok Pisin, as shown in **4.4.2**. Moreover, they also occur in early Solomon Islands Pidgin (see **4.4.4**).

4.4.4 Solomon Islands Pidgin

This is one of the varieties of Melanesian Pidgin English whose earlier stages are hardly documented. The data below are from Keesing (1991b), Jourdan and Keesing (1997) and Lee (1999). They consist of forms used by older speakers or of fossilized forms, on the assumption that they reflect, faithfully enough, the phonology of the so-called "bush" pidgin, i.e. earlier Solomon Islands Pidgin. As noted by Goulden (1990, p. 54), "bush" varieties of [Solomon Islands] Pijin [...] conserve archaic material and thus provide insights into the history and development of MPE [= Melanesian Pidgin English]"[45].

Consider the following instances of reflexes of etyma with obstruent + liquid onset clusters (see also **Appendix 17**):

(380) /pl/
piles (E *place*) 'place' (Jourdan and Keesing 1997, p. 406)
pulande (E *plenty*) 'lots' (Keesing 1991b, p. 321)

(381) /br/
barata (E *brother*) 'brother' (Jourdan and Keesing 1997, p. 408)

(382) /θr/
toroaot (E *throw*, *out*) 'to throw up' (Lee 1999, p. 82)

(383) /tr/
turu (E *true*) 'really' (Lee 1999, p. 78)

(384) /dr/
dorop-em (E *drop*, *him*) 'to drop' (Keesing 1991b, p. 322)

(385) /kr/
koros-im (E *cross*) 'to cross' (Keesing 1991b, p. 320)

As can be seen, in all the forms listed the obstruent + liquid onset cluster in the etymon is broken up by an epenthetic vowel. In 8 of the 12 forms, epenthesis involves vowel copying, which thus appears to be the preferred solution, and obtains from the following ranking of constraints:

(386) *ONS/OL, MAX-IO, LEFT-ANCHOR, COPY >> DEP-IO, CONTIGUITY

The evaluation in tableau (387) validates the constraint hierarchy suggested:

(387)

/tru:/	*ONS/OL	MAX-I O	L-ANCHOR	COPY	DEP-IO	CONTIG
tru	*!					
tu		*!				
ru		*!	*			
ut.ru			*!		*	
ti.ru				*!	*	*
☞ tu.ru					*	*

Three forms display the epenthetic vowel [i]. This is presumably the default epenthetic vowel. Compare *barata*, with a copy of the vowel, between /b/ and the liquid /r/, to *bilai*, and *birek*, with [i] in the same phonological environment. For forms such as the latter, the following constraint hierarchy has to be assumed:

(388) *ONS/OL, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

This is confirmed by the evaluation in the tableau below:

[45] See also section **4.4.2** and note 36.

(389)

/pleis/	*ONS/OL	MAX-I O	L-ANCHOR	DEP-IO	CONTIG
ples	*!				
pes		*!			
les			*!		
ip. les			*!	*	
☞ pi.les				*	*

A somewhat rare option seems to reside in transcategorial progressive assimilation of the C to V type. This is exemplified by *pulande*, where the [LAB] consonant /p/ determines the occurrence of [u] as the epenthetic vowel. This is captured by the constraint hierarchy in (390):

(390) *ONS/OL, MAX-IO, LEFT-ANCHOR, C_{LAB}-V_{LAB} >> DEP-IO, CONTIGUITY

The interaction of the constraints is illustrated in the tableau below:

(391)

/plenti/	*ONS/OL	MAX-IO	L-ANCHOR	C_{LAB}-V_{LAB}	DEP-IO	CONTIG
plan.de	*!					
pan.de		*!				
lan.de		*!	*			
ip.lan.de			*!		*	
pi.lan.de				*!	*	*
☞ pu.lan.de					*	*

To sum up, early Solomon Islands Pidgin seems to have resorted to epenthesis with vowel copying in most cases in order to break up illicit obstruent + liquid onset clusters. A second choice is default [i]. Transcategorial assimilation is far less frequent. Early Solomon Islands Pidgin is another illustration of the variability of the phonology of early pidgins (such as Tok Pisin, in **4.4.2**, or Bislama, in **4.4.3**).

4.4.5 Torres Strait Creole

In its earlier stages, Torres Strait Creole appears to have resorted to vowel epenthesis for the resolution of illicit obstruent + liquid onset clusters. This is rather not surprising, given that this creole is historically linked to Melanesian Pidgin English, in the various varieties of which epenthetic vowels have been shown (in **4.4.2**, **4.4.3**, and **4.4.4**) to be widely attested. According to Shnukal (1988, p. 15): "some older speakers generally break up consonant clusters by putting in an extra vowel (called an epenthetic or excrescent vowel)". This opinion is reiterated in Shnukal (1991, p. 185): "[e]arly English borrowings may add an epenthetic vowel to initial [...] clusters". Shnukal (1988, p. 15) further specifies that "[t]his [...] occurs at the beginning of words".

Consider the following examples of Torres Strait Creole reflexes of etyma containing such illicit obstruent + liquid onset clusters:

(392) /pl/
palawa (E *flower*) 'flower' (Shnukal 1988, p. 15)
(393) /br/
burum (E *broom*) 'broom' (Shnukal 1988, p. 15)
(394) /kr/
koropis (E *crawfish*) 'crayfish' (Shnukal, 1988, p. 15)

As for the quality of the epenthetic vowel, Shnukal (1988, p. 15) writes that "[s]peakers cannot put in just any vowel to break up the consonant cluster at the beginning of the word'. She adds that, "[t]he choice is governed by rule and the vowel chosen must be "in harmony" with the following vowel", i.e. "if the vowel is an i, then the extra vowel must also be an i; if it is a u, then the extra vowel must also be a u; and so on" (Shnukal 1988, p. 15). In fact, Shnukal is wrong in referring to vowel harmony. The situation just presented constitutes a clear case of vowel copying, in which the selection of the epenthetic vowel is enforced by the constraint COPY. The constraint hierarchy capturing the adjustment of etyma with obstruent + liquid onset clusters is therefore:

(395) *ONS/OL, MAX-IO, LEFT-ANCHOR, COPY >> DEP-IO, CONTIGUITY

Tableau (396) shows the interaction of these constraints for the input /bru:m/ 'broom'.

(396)

/bru:m/	*ONS/OL	MAX-IO	L-ANCHOR	COPY	DEP-IO	CONTIG
brum	*!					
bum		*!				
rum			*!			
ub.rum			*!		*	
bi.rum				*!	*	*
☞ bu.rum					*	*

4.4.6 Kriol

In his general discussion of early Kriol reflexes of etyma with clusters, Sandefur (1979, p. 39) states that "[t]he basic change was the avoidance of consonant clusters within the syllable". According to Sandefur (1979, p. 39), "[i]f the second consonant was a [...] lateral [...], a vowel was inserted between the two consonants". Consider the examples below:

(397) /br/
/buřum/ (E *from*) 'from' (Sandefur 1979, p. 40)
(398) /tr/
/tařet/ (E *straight*) 'straight' (Sandefur 1979, p. 40)
(399) /kr/
/gařadjimbat/ (E *scratch*, him) 'to dig' (Sandefur 1979, p. 41)

These are the only examples that I have found in the samples and texts in Sandefur (1979). Unfortunately, Sandefur (1979 and 1991) does not discuss the nature of the epenthetic vowel. Two of Sandefur's (1979) examples however, /buřum/ and /gařadjimbat/, suggest that vowel copying is the preferred strategy for the resolution of illicit onset clusters. If so, this means that COPY dominates DEP-IO in the hierarchy of constraints:

(400) *OL/ONS, MAX-IO, LEFT-ANCHOR, COPY>> DEP-IO, CONTIGUITY

This ranking secures the selection of [buřum] as the optimal output for the input /bru:m/, as seen in the evaluation in the following tableau:

(401)

/bru:m/	*ONS/OL	MAX-I O	L-ANCHOR	COPY	DEP-IO	CONTIG
břum	*!					
bum		*!				
řum			*!			
ub.řum			*!		*	
bi.řum				*!	*	*
☞ bu.řum					*	*

4.5 Modern Pacific English pidgins and creoles

4.5.1 Tok Pisin

There is a consensus among specialists in modern Tok Pisin with respect to the treatment of etyma containing obstruent + liquid in onset position. Mihalic (1957), Dutton (1973), Pawley (1975), Laycock (1985), Hunter (1986), Goulden (1990), Mühlhäusler (1999) and, finally, Smith (2002), in the most comprehensive account of Tok Pisin to date, all agree that the non-anglicized[46] varieties of the language disallow the clusters at issue. A brief and selective review of the literature follows.

Mihalic (1957, p. xviii) writes that "[m]any Melanesians have difficulty pronouncing groups of consonants, especially at the beginning of words" and lists the clusters which are not permitted in onset position "pr, br, fr, tr, dr, kr, gr, pl, bl, fl, kl, gl". Dutton (1973, p. 36) states that, in general, consonant clusters "are often pronounced with a very short, and sometimes quite distinct, vowel separating them". Hunter (1986, p. 9) first notes that "[w]ords beginning with pr, br, fr, tr, dr, kr, gr, bl, fl, kl and gl will sometimes be allowed" , but then goes on to say that"[o]ften an extra vowel will be inserted between the consonants". In his turn, Goulden (1990, p. 49) also writes that "English consonant clusters in initial position are often broken up by

[46] I refrain from using the term "basilectal", since Siegel (1997) concludes that "an English-to-pidgin continuum does not exist in Papua New Guinea".

an epenthetic vowel in Tok Pisin reflexes". Mühlhäusler (1999, p. 102) briefly comments that "[c]onsonant clusters are rare in Tok Pisin" and that "[c]lusters in words borrowed from English are avoided by inserting vowels". Finally, in his much more detailed discussion of contemporary Tok Pisin phonology, Smith (2002, p.48) lists obstruent + liquid clusters among those occurring in the onset. However, he also mentions the fact that "there is considerable variation and many clusters may be separated by epenthetic vowels". In addition, he notes that "[m]any of the clusters appear to be due to English influence" or to "reduction due to rapid speech".

Before examining relevant examples, let me mention that the overwhelming majority of them are from sources other than dictionaries. Dictionaries of Tok Pisin tend to include only entries illustrating "standard" Tok Pisin, which amounts to forms that come, from the point of view of the clusters at issue, pretty close to the form in English and preserve them. I have therefore resorted to other sources, including transcripts of recordings of Tok Pisin (Pawley 1975 and, especially, Smith 2002).

The following are examples of Tok Pisin reflexes of etyma with obstruent + liquid clusters in onset position (see also **Appendix 18**):

(402) /pl/
palang (E *plank*) 'bit of wood' (Smith 2002, p. 177)
(403) /br/
barata (E *brother*) 'brother' (Laycock 1985, p. 303)
(404) /fl/
filai (E *fly*) 'to fly' (Mihalic 1957, p. xviii)
(405) /fr/
poret (E *afraid*) 'afraid' (Smith 2002, p. 44)
(406) /tr/
turu (E *true*) 'true' (Laycock 1985, p. 303)
(407) /kl/
kilin (E *clean*) 'clean' (Pawley 1975, p. 216)
(408) /kr/
karai (E *cry*) 'to cry' (Smith 2002, p. 135)
(409) /gl/
galas (E *glass*) 'glass' (Mihalic 1957, p. xviii)
(410) /gr/
giram (E *gram*) 'gram' (Hunter 1986, p. 70)

The examples above, from a variety of independent sources, covering almost 40 years, show that Tok Pisin resorts indeed to the strategy of vowel epenthesis for the resolution of the illicit obstruent + liquid onset clusters.

The specialists mentioned have rather little to say on the quality of the epenthetic vowel. One exception is Mihalic (1957, p. xviii), who specifies that the epenthetic vowel "is not constant, varying from i to a (and e) according to the region and the speaker". In what follows, I also address the issue of the nature of the epenthetic vowel.

The examples confirm the existence of variation, mentioned by Mihalic (1957, p. xviii). However, variation is not as random as suggested by Mihalic, but appears to be constrained, to some extent at least, and reducible to two main strategies. Thus, the 47 forms listed above, taken from different sources, represent 25 words. Of these, 23 forms illustrate vowel copying. 23 other forms exhibit [i] as a default epenthetic vowel. That [i] is indeed a default epenthetic vowel is shown by the fact that it can occur in exactly the same environment as a copy of the vowel. Compare, for instance, *kilok* 'clock' and *kilin* 'clean'. An even better example is the coexistence of alternate forms such as *filai* and *palai*, both meaning 'to fly'. Although the number of forms in my corpus evincing vowel copying is equal to that of forms with an epenthetic [i], Tok Pisin appears to prefer vowel copying to epenthesizing [i]. The 23 forms illustrating vowel copying represent 15 words, whereas the 23 forms with epenthetic [i] represent only nine. Recall that this tendency towards favouring vowel copying over epenthesis of the default vowel [i] is also typical of early Tok Pisin, as shown in section **4.4.2**. Again as in the earlier stages of the language, transcategorial progressive assimilation of the C-to-V type is a distant third, illustrated by only one form, *poret*.

Epenthesis with vowel copying occurs if the constraint COPY is undominated. The ranking of the relevant constraints is given in (411):

(411) *ONS/OL, MAX-IO, LEFT-ANCHOR, COPY >> DEP-IO, CONTIGUITY

Consider e.g. the evaluation of the candidates, for the input form /gla:s/:

(412)

/gla:s/	*ONS/OL	MAX-IO	L-ANCHOR	COPY	DEP-IO	CONTIG
glas	*!					
gas		*!				
las		*!	*			
ag.las			*!		*	
gi.las				*!	*	*
☞ ga.las					*	*

The constraint hierarchy in (413) accounts for the occurrence of the default epenthetic vowel [i]:

(413) *ONS/OL, MAX-IO, LEFT-ANCHOR >> DEP-IO, CONTIGUITY

The following tableau shows the evaluation for the input /flai/:

(414)

/flaɪ/	*ONS/OL	MAX-IO	L-ANCHOR	DEP-IO	CONTIG
flai	*!				
fai		*!			
lai		*!	*		
if.lai			*!	*	
☞ fi.lai				*	*

Finally, transcategorial progressive assimilation of the C-to-V type, illustrated by the form *poret*, is captured by assuming a ranking in which the constraint C_{LAB}-V_{LAB} dominates DEP-IO:

(415) *ONS/OL, MAX-IO, LEFT-ANCHOR, C_{LAB}-V_{LAB} >> DEP-IO, CONTIGUITY

This hierarchy of constraints secures the emergence of [poret] as the optimal candidate, as shown in the tableau below:

(416)

/bred/	*ONS/OL	MAX-IO	L-ANCHOR	C_{LAB}-V_{LAB}	DEP-IO	CONTIG
bret	*!					
bet		*!				
ret		*!	*			
ib.ret			*!		*	
bi.ret				*!	*	*
☞ bo.ret					*	*

4.5.2 Bislama

Obstruent + liquid onset clusters are permitted in modern Bislama. Guy (1974, p. 7) does not list these clusters among those undergoing reduction. The Bislama reflexes of etyma containing such clusters listed in his dictionary also exhibit clusters. The clusters at issue are well represented in a more recent description of Bislama as well (Balzer 1999). Note that, as explicitly mentioned by the author, "[t]he Bislama described […] is more applicable to villages" (Balzer 1999, p. 16). That is, although "Town Bislama tends to be closer to English" (Balzer 1999, p. 16), obstruent + liquid onset clusters also occur in rural Bislama, a variety less likely to show effects of anglicization.

Examples of unepenthesized reflexes of obstruent + liquid clusters in the onset include the following:

(417) /pl/
ples (E *place*) 'area' (Balzer 1999, p. 27)

(418) /pr/
praes (E *price*) 'price' (Balzer 1999, p. 37)

(419) /bl/
blak (E *black*) 'black (Balzer 1999, p. 46)

(420) /fr/
Fraede (E *Friday*) 'Friday' (Balzer 1999, p. 50)

(421) /tr/
truk (E *truck*) 'truck' (Balzer 1999, p. 21)
(422) /kl/
klosap (E *close up*) 'close by' (Balzer 1999, p. 38)

The examples above indicate that a reranking of constraints has taken place. In the current hierarchy DEP-IO dominates *ONS/OL, COPY and C_{LAB}-V_{LAB}:

(423) MAX-IO, LEFT-ANCHOR, DEP-IO, CONTIGUITY >> *ONS/OL, COPY, C_{LAB}-V_{LAB}

An illustration of this ranking is given below:

(424)

/fraɪdi/	MAX-IO	L-ANCHOR	DEP-IO	CONTIG	*ONS/OL	COPY	C_{LAB}-V_{LAB}
☞ frai.de					*		
fai.de	*!						
rai.de	*!	*					
fo.rai.de			*!	*			

The fact that modern Bislama allows obstruent + liquid onset clusters is further confirmed by their occurrence even in reflexes of etyma which do not contain them:

(425) /bl/
blong (E *belong*) 'of' (Balzer 1999, p. 27)

4.5.3 Solomon Islands Pidgin

As shown in section **4.4.3**, early Solomon Islands Pidgin breaks up obstruent + liquid onset clusters by means of vowel epenthesis. On the other hand, in their description of the phonology of what they call "urban Pijin", Jourdan and Keesing (1997, p. 413) note that one of its characteristics is "the disappearance of [...] epenthetic vowels". As a consequence, modern Solomon Islands Pidgin evinces indeed a large number of lexical items containing obstruent + liquid clusters in the onset.

Consider below a representative sample of unepenthesized reflexes of obstruent + liquid onset clusters:

(426) /pl/
plande (E *plenty*) 'plenty' (Lee 1999, p. 95)
(427) /br/
brata (E *brother*) 'brother' (Lee 1999, p. 97)
(428) /fr/
fren (E *friend*) 'friend' (Lee 1999, p. 67)
(429) /tr/
trak (E *truck*) 'truck' (Lee 1999, p. 80)
(430) /dr/
draeva (E *driver*) 'driver' (Lee 1999, p. 81)

(431) /kr/
kros (E *cross*) 'to be cross' (Lee 1999, p. 76)

Such examples show that a Solomon Islands Pidgin has undergone a reranking of constraints, with *ONS/OL, COPY and C_{LAB}-V_{LAB} now dominated by DEP-IO:

(432) MAX-IO, LEFT-ANCHOR, DEP-IO, CONTIGUITY >> *ONS/OL, COPY , C_{LAB}-V_{LAB}

An illustration of this ranking is given below:

(433)

/krɔs/	MAX-IO	L-ANCHOR	DEP-IO	CONTIG	*ONS/OL	COPY	C_{LAB}-V_{LAB}
☞ kros					*		
kos	*!						
ros	*!	*					
ko.ros			*!	*			

One remark is in order here. According to Lee (1999, p. 57), some "speakers add a weak vowel between the consonants of a clusters". This suggests that the process of disappearance of the formerly epenthesized vowels is not as yet completed for all speakers. That is, for some speakers, *ONS/OL is still undominated. On the other hand, Jourdan and Keesing (1997, p. 413) also mention the "disappearance of interconsonantal [...] vowels". This accounts for the emergence of obstruent + liquid onset clusters not found in the etymon, as in the example below:

(434) *blong*[47] (E *belong*) 'of' (Jourdan and Keesing (1997, p. 414)

4.5.4 Torres Strait Creole

Obstruent + liquid clusters in onset position are permitted in present-day Torres Strait Creole. Shnukal (1988, p. 15) writes that younger speakers rarely break up consonant clusters. Etyma containing such clusters have reflexes with clusters, as can be seen from the many relevant entries in Shnukal's dictionary (in Shnukal 1988, pp. 104–230). More recently, Shnukal (1991, p. 185) states that "[a]ny sequence of two or more consonants that begins an English word can also begin a word in TSC [= Torres Strait Creole]".

Consider, as an illustrative sample, the following examples, which have been shown in **4.4.4** to undergo vowel epenthesis in earlier stages of Torres Strait Creole:

(435) /br/
broom (E *broom*) 'broom' (Shnukal 1988, p. 15)

(436) /fl/
plawa (E *flower*) 'flower' (Shnukal 1988, p. 15)

[47] Cf. the forms *bilong* and *bulong* in early Solomon Islands Pidgin (Jourdan and Keesing 1997, p. 414).

(437) /kr/

kropis (E *crawfish*) 'crawfish' (Shnukal 1988, p. 15)

Clearly then, reranking of constraints has occurred in Torres Strait Creole too and DEP-IO outranks *ONS/OL and COPY:

(438) MAX-IO, LEFT-ANCHOR, DEP-IO, CONTIGUITY >> *ONS/OL, COPY

The results of this reranking are illustrated in the following tableau:

(439)

/bru:m/	MAX-IO	L-ANCHOR	DEP-IO	CONTIG	*ONS/OL	COPY
☞ brum					*	
bum	*!					
rum	*!	*				
bu.rum			*!	*		

4.5.5 Kriol

As noted by Sandefur (1979, p. 49), "[t]he speech of most speakers [...] tends to be centered between the two extremes of the continuum" of modern Kriol[48]. For most speakers of contemporary Kriol, "[w]ith clusters that were avoided by insertion of a vowel, the vowel is deleted. Recall from section **4.4.5** that in early Kriol obstruent + liquid onset clusters are broken up by vowel epenthesis. It follows that unepenthesized reflexes of obstruent + liquid onset clusters are expected to occur in modern Kriol. This is indeed what examples such as the one below show:

(440) /pl/

blandi (E *plenty*) 'plenty' (Sandefur 1991, p. 100)

(441) /bl/

blad (E *blood*) 'blood' (Sandefur 1991, p. 209)

(442) /fr/

brom (E *from*) 'from' (Sandefur 1991, p. 209)

(443) /tr/

tri (E *tree*) 'tree' (Sandefur 1991, p. 101)

(444) /kr/

krai (E *cry*) 'to cry' (Sandefur 1991, p. 136)

(445) /gr/

gras (E *grass*) 'grass' (Sandefur 1991, p. 81)

As a result of reranking, *ONS/OL and COPY are ranked low in the hierarchy and are dominated by DEP-IO:

(446) MAX-IO, LEFT-ANCHOR, DEP-IO, CONTIGUITY >> *ONS/OL, COPY

Consider the evaluation for the input form /frɔm/:

---

[48] See also Sandefur (1979, pp. 47–49, 1991, pp. 185–186), and Sandefur and Harris (1996, pp. 185–186).

(447)

/frɔm/	MAX-IO	L-ANCHOR	DEP-IO	CONTIG	*ONS/OL	COPY
☞ brom					*	
bom	*!					
rom	*!	*				
bu.rum			*!	*		

4.6 Conclusions

As has been shown, obstruent + glide onset clusters are preserved in most English pidgins and creoles, whereas obstruent + liquid are in some of them subject to simplification. Neither type is marked in terms of, so an analysis appealing to this constraint would fail to account for their different treatment. The occurrence of /kw/ or /gw/ in onset position could be related to the bigger sonority distance between stops and glides. The value n= 4 of ONSSON in obstruent + sonorant clusters appears to facilitate their retention. On the other hand, compared to onset clusters that violate SON-SEQ, obstruent + liquid onset clusters are universally less marked. A case, then, could be made for the learnability of such clusters. This would explain their occurrence even in some of the creoles of Surinam, with otherwise rather tight constraints on syllable structure.

If illicit, obstruent + liquid onset clusters undergo epenthesis. Unlike /s/-initial onset clusters, deletion of any of the members of the cluster is never an available option. It follows that the crucial subhierarchy is MAX-IO >> DEP-IO.

The most frequent type of epenthesis is with vowel copying. It occurs in all the varieties analyzed, except for Assimilated Cameroon Pidgin English (**4.3.3**). Epenthesis *cum* vowel harmony is attested only in Yoruba Nigerian Pidgin English (**4.3.2**). Several varieties resort to just one type of epenthesis: with vowel copying in e.g. Ghanaian Pidgin English (**4.3.1**) or with default [i] in e.g. Assimilated Cameroon Pidgin English (**4.3.3**). The default epenthetic vowel is mostly [i]. Epenthetic [u] may be enforced by HARMONY, in Yoruba Nigerian Pidgin English (**4.3.2**), or by C_{LAB}-V_{LAB}, in e.g. early Bislama (**4.4.3**).

Several varieties have undergone reranking, but in opposite ways. Thus, Saramaccan (**4.2.3**), Ndyuka (**4.2.6**), and Aluku (**4.3.4**) no longer permit obstruent + liquid onset clusters, i.e. *ONS/OL is undominated. However, the clusters at issue are allowed in the modern varieties of Bislama (**4.5.2**), Solomon Islands Pidgin (**4.5.3**), Torres Strait Creole (**4.5.4**) and Kriol (**4.5.5**), i.e. *ONS/OL is now outranked by all the other relevant faithfulness constraints.

5

THE TREATMENT OF CODAS

5.1 Introduction

This chapter examines the adjustment undergone by etyma with codas in the Atlantic and Pacific English-based pidgins and creoles. Reflexes of both complex and simple codas are analysed, in both early and modern varieties.

A number of preliminary remarks are in order here. First, many English pidgins and creoles, the Atlantic varieties in particular (see e.g. Parkvall 2000, pp. 52–54) are known for extensively modifying the codas in the etyma. Second, unlike in chapters **3** and **4**, a much smaller number of modern varieties is considered. Note that the earlier stages of the modern varieties included are not discussed, given the absence of a significant corpus of relevant data. Third, the section on the creoles of Surinam (**5.2.4**) is slightly different in its focus. Here, particular attention is paid to the historical-linguistic relations among the Surinam creoles examined. Fourth, to simplify the tableaux, the constraint NoCoda is only included if its violation is relevant to the selection of the optimal output form. Fifth, whenever the ranking of the constraint Contiguity is underdetermined by the data and/or irrelevant it has not been included in the tableaux. Finally, emphasis is placed, as in much of the literature, on the treatment of word-final codas.

The early Atlantic English creoles considered are: Barbadian (in section **5.2.1**), Saint Kittitian (**5.2.2**), Guyanese (**5.2.3**), Sranan (**5.2.4.1**), Saramaccan (**5.2.4.2**), and Jamaican (**5.2.5**). Two special cases, Ndyuka (**5.2.4.3**), and Aluku (**5.2.4.4**) are also included here.

In section **5.3** I look at the treatment of codas in uneducated Ghanaian Pidgin English (**5.3.1.1**), jargonized Ghanaian Pidgin English (**5.3.1.2**), the so-called Pidgin Proper variety of Nigerian Pidgin English (**5.3.2.1**), and Yoruba Nigerian Pidgin English (**5.3.2.2**).

Three early Pacific English pidgins are considered in **5.4** as follows: Tok Pisin (**5.4.1**), Bislama (**5.4.2**) and Solomon Islands Pidgin (**5.4.3**).

The conclusions are summarized in section **5.5**.

5.2 Early Atlantic English creoles

5.2.1 Barbadian

The analysis below is based on data from Rickford and Handler (1994), Fields (1995) and Plag (1999). Of these, it is only the latter that deals systematically with several aspects of the phonology of early Barbadian. Before proceeding to the analysis, a cautionary remark is in order with respect to the quality of the data. As noted by Rickford and Handler (1994, p. 246, note 13) "[m]ost writers do not attempt to represent every phonetic detail of dialect speech, either because they are unable or unwilling (for instance to preserve readability) to do so". In his turn, Plag (1999, p. 177) considers the data from early Barbadian as being "certainly of less value" since "the quantity of texts is [...] smaller and [...] the orthography is much more standard-like".

Consider first the treatment of etyma with clusters in coda position. The examination of early Barbadian texts has yielded just a few instances of reflexes of two-consonant codas, listed below. Unfortunately, all these examples consist of reflexes of coda clusters made up of a nasal stop plus an obstruent (either a stop or a fricative). The analysis that follows is therefore of necessity limited to the treatment of this type of complex codas.

(1) /nt/
1799 *wantee* (E *want*) 'to want' (Rickford and Handler 1994, p. 236)

(2) /nd/
1789 *tand á* (E *stand*) 'to stay' (Rickford and Handler 1994, p. 233)

(3) /ns/
1818 *dancee* (E *dance*) 'to dance' (Fields 1995, p. 104)

(4) /ŋk/
1840 *tinkee* (E *think*) 'thought' (Fields 1995, p. 104)

The early Barbadian forms point towards three conclusions. First, *COMPLEXCODA is undominated since coda clusters are illicit. Their resolution involves paragoge in violation of DEP-IO and RIGHT-ANCHOR. Consequently, these two constraints are ranked low in the hierarchy. Also, they must be dominated by MAX-IO given that cluster reduction through the deletion of one of the consonants is not an option. Second, an intrusive vowel is added only after the [-nasal] consonant in the original coda cluster, but not after the [+nasal] one. This shows that [+nasal] codas are allowed in early Barbadian, which can be captured by a restriction on codas, already introduced[1] but repeated here for convenience:

---

[1] In chapter **3**, section **3.2.6**, under (33).

(5) ***ORALCODA**: only [+nasal] consonants are possible codas.

Third, since anaptyxis into the coda cluster is ruled out, this indicates that CONTIGUITY is ranked high and that it dominates DEP-IO and RIGHT-ANCHOR. The constraint hierarchy is therefore:

(6) *COMPLEXCODA, *ORALCODA, MAX-IO, CONTIGUITY >> DEP-IO, RIGHT-ANCHOR

The ranking is confirmed by the evaluation in the tableau below:

(7)

/θiŋk/	*COMPLEXCODA	*ORALCODA	MAX-IO	CONTIG	DEP-IO	R-ANCHOR
tiŋk	*!					
tin			*!			*
tik		*!	*	*		
☞ tin.ki					*	*
ti.nik				*!	*	*

Consider next reflexes of etyma with simple codas (see also **Appendix 1**):

(8) /v/
1818 *lovee* (E *love*) 'to love' (Fields 1995, p. 97)

(9) /t/
1799 *hurtee*[2] (E *hurt*) 'to hurt' (Rickford and Handler 1994, p. 236)
1834 *wharra*[3] (E *what*) 'what' (Fields 1995, p. 94)

(10) /l/
-1786 *killa* (E *kill*) 'to kill' (Rickford and Handler 1994, p. 231)

(11) /r/
1835 *yerry* (dial. E *year*[4]) 'to hear' (Fields 1995, p. 94)

(12) /s/
1818 *missy* (E *miss*) 'miss' (Fields 1995, p. 104)

(13) /tʃ/
1799 *muchee* (E *much*) 'much' (Rickford and Handler 1994, p. 236)

(14) /k/
1799 *blackee* (E *black*) 'black' (Rickford and Handler 1994, p. 236)

(15) /ŋ/
1818 *singee* (E *sing*) 'to sing' (Fields 1995, p. 104)

The forms listed above show that early Barbadian disallows [-nasal] consonants in codas. If the etymon ends in a [-nasal] consonant, then its reflex in early Barbadian exhibits a paragogic vowel. There is just one exception, *singee*, which displays a paragogic vowel even though the etymon ends in /ŋ/, a [+nasal] consonant. While this may be simply an exception, a possible explanantion could be that the original [+nasal] velar stop /ŋ/ was perceived as the

[2] I assume an r-less etymon. See Plag (1999, pp. 183–184) on post-vocalic /r/ in early Barbadian Creole.
[3] The flap [ř], is transcribed either with *rr* or with *r* in early records of Atlantic pidgins and creoles.
[4] See Baker (1999, p. 326) for a discussion of this etymon.

sequence [n] + [g]. If so, paragoge is no longer exceptional, since [-nasal] codas have already been shown to be disallowed in early Barbadian. The ranking argument, then, is identical to that suggested for reflexes of etyma with complex codas. The hierarchy of constraints is:

(16) *OralCoda, Max-IO, Contiguity >> Dep-IO, Right-Anchor

Tableau (17) illustrates the evaluation for the input form /blæk/:

(17)

/blæk/	*OralCoda	Max-IO	Contig	Dep-IO	R-Anchor
blak	*!				
bla		*!			*
☞ bla.ki				*	*

My analysis outlined above thus confirms observations of other researchers, who, however, have not proceeded to a systematic investigation of the early Barbadian reflexes of etyma with complex or simple codas. Rickford and Handler (1994, p. 232) only write that "the enclitic vowel […] is a common feature of early pidgin-creole texts". Fields (1995, pp. 93–94) mentions the "reduction of final consonant clusters", and briefly refers to "epithetic vowels"[5] as being one of the "basilectal phonological features, attested in early Bajan texts".

Next, the issue of the quality of the paragogic vowel needs to be addressed. Note that this problem is not discussed in any of the previous investigations of the phonology of early Barbadian, including Plag (1999), which is characterized as "the first systematic analysis of phonological aspects of Early Barbados Creole" (Plag 1999, p. 176). As can be seen from the examples, whether reflexes of complex codas or of simple ones, the most frequent paragogic vowel is [i], which can therefore be considered the default paragogic vowel. However, a number of forms, e.g. *tand á* 'to stay', illustrate vowel copying, which can be captured by assuming the constraint Copy. For such forms, the constraint hierarchy is:

(18) *OralCoda, Max-IO, Contiguity, Copy >> Dep-IO, Right-Anchor

The evaluation of a form displaying vowel copying is shown in tableau (19):

(19)

/wɔt/	*OralCoda	Max-IO	Contig	Copy	Dep-IO	R-Anchor
wař	*!					
wa		*!				*
wa.ři				*!	*	*
☞ wa.řa					*	*

[5] A synonym for "paragogic vowels".

Finally, I have no principled explanation for two of the forms exhibiting paragoge, *killa* 'to kill', and *missa* 'miss', on the assumption that *a* stands for [a]. Indeed, these could not be instances of a default paragogic vowel, which, as shown above, appears to have been [i]. Vowel copying is ruled out, since the vowel to the left is [i]. Transcategorial assimilation, of the C-to-V type, is also excluded, as both /l/ in *killa* and /s/ in *missa* are [CORONAL] consonants and would be expected to select a [CORONAL] paragogic vowel, such as [i].

5.2.2 Saint Kittitian

The main body of data on early Saint Kittitian is drawn from Baker and Bruyn's (1999) edition of late 18th century texts. Consequently, most of the examples below date from around 1785. To these a number of later, 19th century examples, from Parkvall and Edlund (1997–1998), have been added.

The examination of the word index by Bruyn and Shrimpton (1999) has yielded the following reflexes of etyma with clusters in the coda (see also **Appendix 2**):

(20) /ft/
-1785- *soff* (E *soft*) 'comfortable' (Bruyn and Shrimpton 1999, p. 428)
(21) /nd/
-1785- *an'* (E *and*) 'and (Bruyn and Shrimpton 1999, p. 419)
(22) /st/
-1785- *mose* (E *almost*) 'almost' (Bruyn and Shrimpton 1999, p. 426)
(23) /rm/
-1785- *harrum* (E *harm*) 'harm' (Bruyn and Shrimpton 1999, p. 424)
-1785- *worrum* (E *worrum*) 'worm' (Bruyn and Shrimpton 1999, p. 430)

As can be seen, complex codas in the etyma are not treated uniformly. An analysis in terms of the constraint *COMPLEXCODA would fail to account for the differences between the reflexes of coda clusters ending in a [-nasal, CORONAL] stop and of those containing the sequence /rm/. The former can be explained by assuming the constraint *CODA/C+t/d:

(24) ***CODA/C+t/d**: clusters made up of a consonant followed by a [-nasal, COR] stop are not permitted in coda position.

The constraint above simply translates into optimality-theoretic terms what has long been observed in the literature on English-based pidgins and creoles with respect to the reflexes of etyma with coda clusters ending in /t/ or /d/ (see e.g. Holm 1988, p. 110). Since anaptyxis is not allowed DEP-IO and CONTIGUITY are also ranked high. Finally, since paragoge necessarily incurs their violation, MAX-IO and RIGHT-ANCHOR are outranked by *CODA/C+t/d, DEP-IO and CONTIGUITY. Therefore, the relevant constraint hierarchy is:

(25) *CODA/C+t/d, DEP-IO, CONTIGUITY >> MAX-IO, RIGHT-ANCHOR

The interaction of these constraints is shown in the tableau below:

(26)

/maind/	*CODA/C+t/d	DEP-IO	CONTIG	MAX-IO	R-ANCHOR
maind	*!				
☞ main				*	*
maid			*!	*	
main.di		*!			*
mai.nid		*!	*		

As for the items in (23), both with reflexes of etymological post-vocalic /r/, *harrum* and *worrum*, I assume the following well-formedness constraint:

(27)***CODA/LS**: a cluster made up of the [+lateral] liquid and a stop is not a permissible coda.

The selection of the optimal candidate is secured by the following hierarchy of constraints:

(28) *CODA/LS, MAX-IO, RIGHT-ANCHOR >> DEP-IO, CONTIGUITY

In (29) I provide the evaluation of the candidate forms given the input *worm*:

(29)

/wərm/	*CODA/ LS	MAX-IO	R-ANCHOR	DEP-IO	CONTIG
worm	*!				
wor		*!			
wom		*!	*		*
wor.mi			*!	*	
wo.ri.mi			*!	**	*
☞ wo.*r*um				*	*

First, a theoretical remark is in order here. At first sight, one might object that *CODA/LS$_{LAB}$ appears suspiciously to be too much of a language-specific constraint[6], i.e. that it is rather unlikely to be part of the set CON of constraints provided by Universal Grammar (see chapter **2**, section **2.1.1**). However, rule-based approaches too have mentioned the non-acceptability of /r/ + /m/ coda clusters. Romaine (1988, p. 64) explicitly refers to "the application of vowel epenthesis in breaking up [the] impermissible cluster sequence of /r + m/". In addition, there is independent evidence, i.e. from other languages, showing the effect of a constraint banning the occurrence of liquid plus stop clusters in coda position. Thus, in standard Dutch there is "optional schwa epenthesis" in these clusters: /mɛlk/ [mɛlək] 'milk', /warm/ [warəm] 'warm' (Davenport and Hannahs 1998, p. 152). Consider also the following forms in several Atlantic English creoles: Gullah [*β*urum] (Johnson 1974, p. 121), Jamaican *worom* (Fyle and Jones

[6] McMahon (2000, pp. 19–24) criticizes the inclusion of language-specific constraints in optimality theory.

1980, p. 398), and Krio *wɔrɔm* (Fyle and Jones 1980, p. 398). This shows that *CODA/ LS may be assumed to be part of the set of universal constraints. Second, the Saint Kittitian forms at issue may illustrate transcategorial assimilation of the V-to-C type, where the [LABIAL] stop /m/ determines the selection of [u] as the epenthetic vowel.

Turning to reflexes of etyma with simple codas, a number of forms display paragoge. Note that the list below does not include several of Plag's (1999) examples since their interpretation as instances of paragoge is controversial.

(30) /t/
  -1785- *jetter*[7] (E *get*) 'to get' (Bruyn and Shrimpton 1999, p. 123)
  -1785- *warraw*[8] (E *what*) 'what' (Bruyn and Shrimpton 1999, p. 430)
(31) /l/
  -1785- *kirry* (E *kill*) 'to kill' (Bruyn and Shrimpton 1999, p. 124)
(32) /r/
  -1785- *cleary* (E *clear*) 'to get rid of' (Bruyn and Shrimpton 1999, p.421)
(33) /s/
  -1785- *worser*[9] (E *worse*) 'worse' (Bruyn and Shrimpton 1999, p. 430)
(34) /z/
  -1785- *noso* (E *nose*) 'nose' (Bruyn and Shrimpton 1999, p. 427)
(35) /k/
  -1785- *lek au* (E *like*) 'like, as' (Bruyn and Shrimpton 1999, p. 425)

Paragoge in early Saint Kittitian has been briefly discussed and/or exemplified by Grant (1999, pp. 127–128) and Plag (1999, pp. 183, and 188–189). However, these authors do not look at the factors conducive to paragoge or to the selection of the paragogic vowel. The late 18th and early 19th century textual attestations indicate that early Saint Kittitian allows [+nasal] consonants in coda position. On the other hand, [-nasal] consonants in the coda of the etyma trigger paragoge, as illustrated by the examples listed above. With reflexes of simple codas then, [-nasal] consonants are prevented from occurring in coda position by *ORALCODA. This constraint is similar to the one it has in early Barbadian, but its effects appear to be restricted to reflexes of simple codas. Both *ORALCODA and MAX-IO outrank DEP-IO and RIGHT-ANCHOR since paragoge is the only option to resolve such illicit codas:

(36) *ORALCODA, MAX-IO >> DEP-IO, RIGHT-ANCHOR

Consider thus the evaluation for e.g. the input *eat*:

---

[7] According to Plag (1999, p. 183), "word-final <er> in general stands for schwa (or a similar unstressed vowel)".

[8] In the various transcriptions of the reflexes of E *what* the flap[ř] is represented by *rr*.

[9] I assume an r-less etymon. See Plag (1999, p. 183) on post-vocalic /r/ in early St Kittitian Creole.

(37)

/i:t/	*ORALCODA	MAX-IO	DEP-IO	R-ANCHOR
jet	*!			
je		*!		*
☞ je.ti			*	*

Early Saint Kittitian has two default paragogic vowels, [i] and what seems to be a schwa, transcribed as *er*. Several forms are instances of vowel copying. The latter are accounted for by assuming the constraint COPY and the following ranking:

(38) *ORALCODA, MAX-IO, COPY >> DEP-IO, RIGHT-ANCHOR

Tableau (39) shows the evaluation for the input *nose*:

(39)

/nəʊz/	*ORALCODA	MAX-IO	COPY	DEP-IO	R-ANCHOR
nos	*!				
no		*!			*
no.si			*!	*	*
☞ no.so				*	*

5.2.3 Guyanese

The analysis that follows is based, almost exclusively, on the textual attestations of early Guyanese in Rickford (1987 and 1991). The textual attestations at issue cover the period from 1796 to 1916.

Most of the forms listed date from late 19th century, i.e. from rather later stages in the development of Guyanese, and some of them from as late as the 1920s. This is particularly true of examples of reduction of word-final clusters ending in /t/ or /d/ via deletion of the stops at issue, which frequently either goes unnoticed or is not reflected in many of the earlier records of the language. Consider, for instance, Rickford's comments on the transcription of late 18th and early 19th century Guyanese Creole in three different sources. Thus, Rickford (1987, p. 294, n. 9) notes that "some features that must have been characteristic of contemporary Creole pronunciation, such as final-consonant-cluster reduction (the realization of "fast" as "fas"), are not represented by any of the three observers". That is, "the three authors represented word-final consonant clusters as intact" since "there is not a single simplified cluster in the forty-two possible cases in their collective dialogues of black speech" (Rickford 1991, p. 307). Clearly, then, deletion of /t/ or /d/ in the complex codas at issue goes back to the earliest stages of the language and is not a later development, as the date of most of the relevant attestations may seem to suggest. Indeed, as put again by Rickford (1991, p. 307) "consonant cluster simplification is too well-attested in modern [Guyanese] creole and even colloquial standard English to have been completely absent from early-nineteenth-century black speech".

The following are reflexes of etyma with complex codas (see also **Appendix 3**):

(40) /ft/
-1896 *leff* (E *left*) 'to leave' (Rickford 1987, p. 108)
(41) /nt/
1899 *can'* (E *can't*) 'can't' (Rickford 1987, p. 103)
(42) /nd/
1899 *an'* (E *and*) 'and' (Rickford 1987, p. 103)
(43) /ld/
1905 *wirl*[10] (E *world*) 'world' (Rickford 1987, p. 112)
(44) /st/
1899 *las'* (E *last*) 'last' (Rickford 1987, p. 103)
(45) /ks/
1905 *bekis* (E *vex*) 'to get angry' (Rickford 1987, p. 119)

The examples above show that complex codas are treated differently, according to their structure. Therefore, an analysis in terms of the constraint *COMPLEXCODA cannot account for the differences in the adjustments operated. Thus, as in early Saint Kittitian Creole (see **5.2.2**), the resolution of illicit complex codas made up of a consonant and the [CORONAL] stop /t/ or /d/ occurs through deletion of the latter member of the cluster. The hierarchy of constraints is therefore:

(46) *CODA/C+t/d, DEP-IO, CONTIGUITY >> MAX-IO, RIGHT-ANCHOR

An illustration of the interplay of these constraints is offered in the following tableau:

(47)

/faind/	*CODA/C+t/d	DEP-IO	CONTIG	MAX-IO	R-ANCHOR
faind	*!				
☞ fain				*	*
faid			*!	*	
fain.di		*!			*
fai.nid		*!	*		

On the other hand, as shown by example (45), etyma with the sequence /ks/ in coda position are subject to epenthesis of [i], which appears to be the default epenthetic vowel. The impermissible sequence /ks/ can be dealt with by assuming the well-formedness constraint *CODA/CF:

(48) ***CODA/CF**: a cluster made up of a consonant and a fricative is not a permissible coda.

[10] From a presumably *r*-less etymon.

For the above constraint there is independent evidence, from other English-based creoles (see **5.4.1**, **5.4.2** and **5.4.3**), that such a constraint is likely to be part of the set of constraints provided by Universal Grammar. *CODA/CF must be ranked high and it necessarily outranks DEP-IO and CONTIGUITY since the illicit coda cluster is broken up by epenthesis. The latter two constraints are also dominated by MAX-IO and RIGHT-ANCHOR.

(49) *CODA/CF, MAX-IO, RIGHT-ANCHOR >> DEP-IO, CONTIGUITY

The evaluation for the input *vex* is set out in the tableau below:

(50)

/vɛks/	*CODA/CF	MAX-IO	R-ANCHOR	DEP-IO	CONTIG
beks	*!				
bek		*!	*		
bes		*!			*
bek.si			*!	*	
☞ be.kis				*	*

Let me turn now to reflexes of simple codas:

(51) /f/
-1808 *wifee* (E *wife*) 'wife' (Rickford 1991, p. 306)

(52) /r/
-1808 *heree* (E *hear*) 'to hear' (Rickford 1987, p. 95)

(53) /s/
-1808 *missee* (E *miss*) 'miss' (Rickford 1987, p. 95)

(54) /ʧ/
-1805 *catchee* (E *catch*) 'to catch' (Rickford 1991, p. 317)

(55) /k/
-1808 *workee*[11](E *work*) 'to work' (Rickford 1991, p. 306)

(56) /g/
1806 *bigee* (E *big*) 'big' (Rickford 1991, p. 316)

It appears that simple codas in the etyma are treated differently from coda clusters. If the etymon ends in a [-nasal] consonant, then a paragogic vowel is added. This suggests that *ORALCODA plays a role in early Guyanese Creole too. The constraint hierarchy is:

(57) *ORALCODA, MAX-IO >> DEP-IO, RIGHT-ANCHOR

The evaluation of the candidates given the input /bɪg/ is given in the following tableau:

(58)

/big/	*ORALCODA	MAX-IO	DEP-IO	R-ANCHOR
big	*!			
bi		*!		
☞ bi.gi			*	*

[11] Cf. also the 1859 citation (in **Appendix 3**).

Two final remarks are in order here. First, judging by the various spellings, *ee*, *ey* and *y*, which presumably represent [i], early Guyanese Creole resorts to a default paragogic vowel. Second, according to Rickford (1987, p. 91), "[w]ords with enclitic vowels [...] are occasionally seen in modern GC [= Guyanese Creole]" as well. These are undoubtedly relics of earlier stages of the language, since paragoge is not only no longer a "productive" means of syllable structure-related adjustments but it is also highly stygmatized socio-linguistically.

5.2.4 The creoles of Surinam

The creoles of Surinam allow no complex codas. The basic mechanism in the adjustment of word-final codas is paragoge. This section first looks at paragoge in early Sranan and in early Saramaccan. Two special cases, Ndyuka and Aluku are also briefly discussed, given their potential relevance for the history of paragoge in the earlier stages of the Surinam creoles. Doubtful instances, i.e. forms which could conceivably obtain from metathesis are not included (see also Plag and Uffmann 2000, p. 314). The focus of this section is, exceptionally, on the relationships holding among these varieties, rather than on the optimality-theoretic analysis of the treatment of codas. Dutch etyma are established on the basis of ten Bruggencate (1978).

5.2.4.1 Sranan

In this section I merely re-examine some of the conclusions reached by Plag and Uffmann (2000) in their study of the development of paragoge in early Sranan, between 1718 and 1777. They criticize Smith's (1977) reconstruction of paragoge in Proto-Sranan on the ground that it is based on a comparative analysis of the modern varieties of the English creoles of Surinam, Sranan, Saramaccan, Ndyuka and Aluku. More exactly, Plag and Uffmann (2000) show that in early Sranan the quality of the paragogic vowel differs from that predicted by Smith (1977). The sources of early Sranan examined by Plag and Uffmann are Herlein (1718), van Dyk (ca. 1765), Nepveu (1770) and Stedman (1777).

In what follows I concentrate, as Plag and Uffman (2000) do on paragoge. In the process, I challenge three of their claims with respect to vowel copying in early Sranan. To do so, I also draw on data from the textual attestations in van den Berg (2000), presumably not available to the authors mentioned. In addition, I present evidence of a type of paragoge that has gone unnoticed by these authors.

Early Sranan allows in principle only simple, [+nasal] codas. Although "a non-negligible percentage of words retain their final [non-nasal] consonant without any further adaptation" it appears that "these words were recognized as loan-words by the original authors" (Plag and Uffmann 2000, p. 315). Plag and Uffmann's conclusions regarding the mechanisms determining the quality of the paragogic vowel in early Sranan are summarized in the following table (adapted from Plag and Uffmann 2000, p. 322):

(59)

	Herlein 1718	van Dyk 1765	Nepveu 1770	Stedman 1777
default vowel	[e]	[i] and [e]	[i]	[i]
stem vowel effect	–	/i/, /e/, /a/→ [i] /o/, /u/→ [e]	vowel copying	[± back] vowel harmony
place of articulation effect	–	–	/a/ and dorsal C→ [a]	–
manner of articulation effect	+	+	+	–

Translated into optimality-theoretic terms, Plag and Uffmann's (2000) account of paragoge in early Sranan between 1718 and 1777 illustrates, among others, the effects of the constraints HARMONY and COPY.

Plag and Uffmann (2000, p. 322) state that "the earliest two sources [i.e. Herlein 1718 and van Dyk ca. 1765] show no evidence of vowel copying effects, whereas in the later sources vowel copying plays a significant role". In Nepveu (1770), "the occurrence of the paragogic vowels /a/, /o/ and /u/ can be interpreted as instances of vowel copying: /a/ only occurs after stem /a/, paragogic /u/ occurs almost exclusively after stem /u/, and /o/ almost exclusively occurs after /o/" (Plag and Uffmann 2000, p. 320). The authors further note that "the occurrence of /a/, /u/ and /o/ cannot be predicted (solely) on the basis of the stem vowel" (Plag and Uffmann 2000, p. 320). The authors identify the following patterns: [u] is the "majority choice" if the /u/ stem also ends in a liquid or stop; [a] is preferred if the stem containing /a/ also ends in a dorsal or labial consonant; finally, [o] is selected only if the stem, in addition to the stem vowel /o/ also ends in a fricative or a liquid (Plag and Uffmann 2000, pp. 320–321).

Consider first the following instances of paragoge with vowel copying in Sranan, from van den Berg (2000):

(60) /p/
 1745 *kom oppo*[12] (E *come, up*) 'to come from' (van den Berg 2000, p. 1744)
(61) /t/
 1759 *soetoe* (E *shoot*) 'to shoot' (van den Berg 2000, p. 98)
 1762 *rommotto*[13] (E *round about*) 'to surround' (van den Berg 2000, p. 103)
(62) /d/
 1761 *goedoe* (E *good*) 'good' (van den Berg 2000, p. 103)
(63) /l/
 1761 *voeloe*[14] (E *full*) 'full, many' (van den Berg 2000, p. 103)
(64) /r/
 1757 *voeroe* (E *for*) 'to' (van den Berg 2000, p. 97)
(65) /k/
 1761 *loekoe* (E *look*) 'to watch' (van den Berg 2000, p. 100)
(66) /ŋ/
 1745 *langa* (E *along*) 'with' (van den Berg 2000, p. 91)
 1745 *tongo* (E *tongue*) 'tongue' (van den Berg 2000, p. 92)

Clearly, the examples above show that, in some varieties of Sranan at least, vowel copying, enforced by the constraint COPY, had already started playing a role (at least) as early as 1745, that is some 25 years before Nepveu (1770), *contra* Plag and Uffmann (2000, p. 322).

Second, as for the quality of the paragogic vowel, the following forms confirm the pattern identified by Plag and Uffmann (2000, p. 322): *goedoe* 'good', *soetoe* 'to shoot', *voeloe* 'full, many', *voeroe* (E *for*) 'for', *loekoe* 'to watch', and *langa* 'with'. Indeed, [u] is selected since /u/ is the stem vowel and the coda consonant is a stop or a liquid respectively. However, three forms *kom oppo*, *rommotto*, and *tongo* do not conform to Plag and Uffmann's (2000) pattern. Indeed, vowel copying does occur even though the final consonant, /p/, /t/ or /ŋ/ respectively, is a stop, *not* a fricative or a liquid. This suggests that in the case of paragogic [o], vowel copying is less restricted than stated by Plag and Uffmann (2000, pp. 320–321).

Third, Plag and Uffmann (2000, p. 323) state[15] that "[a] measurable effect of labial assimilation is first attested in Schumann (1783)", i.e. of transcategorial assimilation of the C-to-V type of the place of articulation feature enforced by the constraint C_{LAB}-V_{LAB}. Consider, however, the following forms from Schumann (1781), *apud* Bruyn (1995):

[12] Note that in spite of the spelling used, this is a monomorphemic word, [komopo], obtaining via reinterpretation of morpheme boundaries.
[13] This is another monomorphemic word [romoto]. Cf. note 12.
[14] Where *v* and *oe* represent [f] and [u] respectively, in accordance with Dutch spelling conventions.
[15] On the basis of a 1998 term paper by Sandra Köhler and Frauke Stöhr 'Paragoge in Sranan: Schumann's *Wörterbuch*', Philipps-University Marburg.

(67) /p/
1781 *tappo* (E *top*) 'top' (Bruyn 1995, p. 61)
1781 *trappo* (E *trap*) 'trap' (Bruyn 1995, p. 81)

Clearly, the choice of paragogic [o] is dictated by the preceding [LABIAL] consonant.

In conclusion, *contra* Plag and Uffmann (2000), vowel copying occurs in (some varieties of) early Sranan some 25 years before Nepveu (1770), stops in coda position in the etyma also trigger paragoge with vowel copying, while labial attraction is actually first attested in Schumann (1781).

Finally, Plag and Uffmann (2000) do not mention the occurrence of rounding vowel harmony. Consider, however, examples such as:

(68) 1783 *boutu* (D *bout* 'leg of mutton') 'fat leg' (Schumann 1783 / 2003)
1783 *dokku* (D *duiken*) 'to dive' (Schumann 1783 / 2003)
1783 *goudu* (D *goud*) 'gold' (Schumann 1783 / 2003)

In such cases, the [LABIAL] vowel enforces the epenthesis of the [LABIAL] vowel /u/. The constraint hierarchy is:

(69) *ORALCODA, MAX-IO, HARMONY >> DEP-IO, RIGHT-ANCHOR

Consider e.g. the evaluation for the input /døyk/:

(70)

/døyk/	*ORALCODA	MAX-IO	HARM	DEP-IO	R-ANCHOR
dok	*!				
do		*!			*
do.ki			*!	*	*
☞ do.ku				*	*

5.2.4.2 Saramaccan

This section is, to some extent, a sort of a replica of Plag and Uffmann's (2000) study of paragoge in early Sranan. As will be seen, some of the results raise interesting issues with respect to the development of Sranan and Saramaccan and the historical-linguistic relationship holding among these English-based creoles. To the best of my knowledge, these issues have not been previously addressed in the literature.

Like early Sranan, early Saramaccan allows, as a rule, only simple, [+nasal] codas, although, as shown below, a few such forms do exhibit paragoge. The relevant *ORALCODA may therefore be assumed. The negligible number of (word-internal) [-nasal] codas are not discussed in what follows. Complex codas in which the first member is [-nasal] are normally broken up by anaptyxis into the cluster (except for /st/ whose reflex is /s/) and paragoge. I do not discuss manner of articulation effects (for which see Smith 1977).

The data analysed below are mostly from the earliest record of Saramaccan, i.e. Schumann's dictionary (*apud* Donicie and Voorhoeve 1962). To these a number of forms from Riemer's (1779) dictionary (in Arends and Perl 1995) are added. The Portuguese and Dutch etyma of the Saramaccan words are established on the basis of ten Bruggencate (1978) and of Mocanu and Mocanu (2000) respectively. Note that the examples are listed, exceptionally, according to the Saramaccan reflex of the final consonant in the etymon.

Consider the following list of early Saramaccan forms (see also **Appendix 4**):

(71) /p/
1778 *sopu* (E *soup*) 'soup' (Donicie and Voorhoeve 1962, p. 99)

(72) /b/
1778 *krabbo* (D *krabben*) 'to scratch' (Donicie and Voorhoeve 1962, p. 51)

(73) /f/
1778 *haffo* (E *half*) 'half' (Donicie and Voorhoeve 1962, p. 44)

(74) /t/
1778 *abíti* (E *a bit*) 'a little' (Donicie and Voorhoeve 1962, p. 1)

(75) /d/
1778 *goudu* (D *goud*) 'gold' (Donicie and Voorhoeve 1962, p. 43)

(76) /n/
1778 *goni* (E *gun*) 'gun' (Donicie and Voorhoeve 1962, p. 43)

(77) /l/
1778 *fúlu* (E *full*) 'full; to fill' (Donicie and Voorhoeve 1962, p. 37)

(78) /r/
1778 *düri*[16] (D *duur*) 'expensive' (Donicie and Voorhoeve 1962, p. 24)

(79) /s/
1778 *lossu* (E *louse*) 'louse' (Donicie and Voorhoeve 1962, p. 67)

(80) /ʃ/
1779 *losho* (E *louse*) 'louse' (Arends and Perl 1995, p. 317)

(81) /ʤ/
1778 *kjenji* (E *change*) 'to (ex)change' (Donicie and Voorhoeve 1962, p. VII)

(82) /k/
1778 *leki* (E *like*) 'like, as' (Donicie and Voorhoeve 1962, p. VII)

(83) /g/
1778 *djoggu* (E *jug*) 'jug' (Donicie and Voorhoeve 1962, p. 26)

(84) /ŋ/
1778 *dringi* (E *drink*) 'all strong drinks' (Donicie and Voorhoeve 1962, p. 24)

---

[16] Where *ü* stands presumably for /i/, as a reflex of D /y/.

The examples show that paragoge in 1778–1779 Saramaccan is of four types: with a default vowel, namely [i], much more rarely [e]; with vowel copying; with labial attraction; occasionally, with rounding vowel harmony. The relevant constraint hierarchies are:

(85) *ORALCODA, MAX-IO >> DEP-IO, RIGHT-ANCHOR
(86) *ORALCODA, MAX-IO, C_{LAB}-V_{LAB} >> DEP-IO, RIGHT-ANCHOR
(87) *ORALCODA, MAX-IO, HARMONY >> DEP-IO, RIGHT-ANCHOR
(88) *ORALCODA, MAX-IO, COPY >> DEP-IO, RIGHT-ANCHOR

The evaluations in tableaux (89) to (92) support the suggested rankings:

(89)

/laik/	*ORALCODA	MAX-IO	DEP-IO	R-ANCHOR
lek	*!			
le		*!		*
☞ le.ki			*	*

(90)

/hɑ:f/	*ORALCODA	MAX-IO	C_{LAB}-V_{LAB}	DEP-IO	R-ANCHOR
haf	*!				
ha		*!			*
ha.fi			*!	*	*
☞ ha.fo				*	*

(91)

/laus/	*ORALCODA	MAX-IO	HARM	DEP-IO	R-ANCHOR
los	*!				
lo		*!			*
lo.si			*!	*	*
☞ lo.su				*	*

(92)

/ful/	*ORALCODA	MAX-IO	COPY	DEP-IO	R-ANCHOR
ful	*!				
fu		*!			*
fu.li			*!	*	*
☞ fu.lu				*	*

As mentioned in **4.2.2.14**, Saramaccan is formed "on the basis of Early Sranan – Proto-Sranan as it were" (Smith 1987, p. 10). More exactly, "[s]omething very like Sranan must have played a significant role in the development of Saramaccan" (Smith (1999a, p. 166). According to Aceto (1996, p. 38), this "early variety of Sranan [...] is the source of the English-derived lexical component (as well as the relatively limited number of Dutch-derived items) in Saramaccan". The split between Sranan and Saramaccan is dated 1690 (Smith 1999a, p. 166). Under the circumstaces, a widely held assumption (e.g. Smith 1999a, p. 166) is that shared characteristics of Sranan and Saramaccan should date from a period *before* the split, i.e. before 1690. This is confirmed by the occurrence of exceptional forms, i.e. which cannot be accounted for in terms of a default paragogic vowel or of paragoge *cum* vowel copying, labial attraction and vowel harmony respectively, shared by early Sranan and early Saramaccan. These include e.g. Saramaccan *dago* / Sranan *dagu*, *gado* 'God', *hagu* 'hog'[17].

Let me consider the implications of the position according to which characteristics shared by Sranan and Saramaccan date from before 1690 for paragoge in the early stages of these languages. One such problem resides in the effects of the constraint C_{LAB}-V_{LAB}. As shown above, by 1778, this constraint enforces the selection of a [LABIAL] paragogic vowel, if the preceding consonant is also [LABIAL]. However, early Sranan has also been shown to exhibit the effect of labial attraction at least by 1781 (see **5.2.4.1**). Whereas for the latter, earlier relevant forms display the default paragogic vowel [e], there is currently no available evidence as to a similar development in early Saramaccan. Now, this means that the evidence points to contradictory conclusions. The data from pre-1781 Sranan show that the default paragogic [e] is replaced by 1778 by a [LABIAL] paragogic vowel, if the preceding consonant is [LABIAL]. One is therefore forced to posit [e] as the original paragogic vowel in this phonological context. On the other hand, on currently available evidence, a [LABIAL] paragogic vowel, [o] or [u] has to be posited for Saramaccan. Since Saramaccan originates in pre-1690 Sranan, it is [o] or [u] that should be the original paragogic vowel in the phonological context at issue for Sranan as well. Obviously, positing [o] or [u] as the original paragogic vowel in Sranan runs counter to the evidence from the pre-1781 period. An alternative analysis might invoke the possibility of identical, but parallel, internal developments. On this view, one should posit [e] as the original default paragogic vowel for the earliest stage of Sranan and assume this stage for the relevant items in pre-1778 Saramaccan, i.e. posit for the latter an initial, unattested *[e]. Indeed, as shown below, [e] appears to have been the default paragogic. As I see it, such an account would still leave open the following question: how is it that both Sranan and Saramaccan start switching to labial attraction almost at the same time, i.e. the former by 1781 and the latter by 1778? Note, incidentally, that labial assimilation is first attested, though only slightly earlier, in Saramaccan.

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[17] Cf. also Smith (1977, p. 28).

Consider next the vowel harmony effects brought about by the constraint HARMONY. Early Sranan and early Saramaccan show again striking similarities. There is no direct evidence whether rounding vowel harmony effects occur in pre-1778 Saramaccan. Comparative evidence from 1783 Sranan (see **5.2.4.1**) suggests that paragoge *cum* vowel harmony must be a later development in Saramaccan as well. Now, this would be a second instance of identical internal developments in Sranan and Saramaccan. If so, this raises the additional issue of why both Sranan and Saramaccan start showing rounding vowel harmony effects in paragoge at, again, about the same date: Sranan by 1783 and Saramaccan by 1778.

Finally, let me turn to the effects of vowel copying, enforced by the constraint COPY. This time, there is some evidence that pre-1778 Saramaccan may have started out with the default paragogic vowel [e]. The 1778 and 1779 samples of Saramaccan suggest that this is a period of transition from the original default paragogic vowel [e] to a vowel copy. First, there are variant forms, such as the following, which illustrate alternation between the initial default paragogic [e] and a vowel copy:

(93) 1778 *bunne* ~ 1779 *bunnu* (P *bom*)'good'
(94) 1779 *fruge* ~ 1778 *fruku* (D *vroeg*)'early'
(95) 1778 *hoppe* ~1778 *hoppo* (E *up*) 'to stand up'

Second, the modern counterparts of 1778 or 1779 forms with default [e] exhibit the effects of vowel copying:

(96) 1778 *musse* vs. *musu* (Donicie and Voorhoeve 1962, p. 76), *músu* (Betian & al. 2000, p. 94)
(97) 1778 *nuffe* vs. *ndófu* (Donicie and Voorhoeve 1962, p. 79)

These data confirm Plag and Uffmann's (2000) developmental pattern of paragoge in Sranan, according to which [e] is the original default paragogic vowel. In other words, this points to identical, though parallel, internal developments in Sranan and Saramaccan. Now, that would be a third such parallel internal development, which is already a question mark, perhaps. Moreover, what is again left unexplained is why both Sranan and Saramaccan gradually switch to vowel copying in paragoge in, roughly speaking, the same period, by 1745 for the former (see **5.2.4.1**), by 1778 for the latter. Recall that there are no pre-1778 records of Saramaccan, i.e. the possibility exists, in principle, that paragoge with vowel copying occurs decades earlier.

In conclusion, this section on paragoge in early Saramaccan has shown that Sranan and Saramaccan have gone, on *prima facie* evidence, through identical stages after their split in 1690. Three such developments have been identified and dated. Two questions remain unanswered, unfortunately: why do the creoles at issue share the three developments identified, and why is it that the latter date from, approximately, the same period in both early Sranan and early Saramaccan?

5.2.4.3 Special case 1: Ndyuka

Sranan and Ndyuka split in 1712. The latter is closely related to another English creole of Surinam, namely Aluku. There are no records of Ndyuka before early 20th century. However, modern Ndyuka forms (Smith 1977 and 1987, De Groot 1984, Huttar and Huttar 1994, Anon. 2003a, Goury 2003) also exhibit all four types of paragoge identified: with a default vowel, namely [i], with (widespread) vowel copying[18], with labial attraction, and with rounding vowel harmony. Here are representative examples:

(98) default vowel [i]
    taki (E *talk*) 'to say' (De Groot 1984, p. 95)
(99) vowel copying
    bóto (E *boat*) 'boat' (De Groot 1984, p. 16)
(100) labial attraction
    baafu (E *broth*) 'soup' (De Groot 1984, p. 10)
(101) vowel harmony
    nosu (E *nose*) 'nose' (De Groot 1984, p. 72)

5.2.4.4 Special case 2: Aluku

Aluku is an offshoot of Ndyuka, to which it is extremely closely related. The two varieties split by 1775. Although there exist early records of Aluku (from 1877, 189 and 1891)[19], I have not come across any forms relevant with respect to the choice of the paragogic vowel. On the other hand, evidence from modern Aluku (Hurault 1983, Hancock 1987, Smith 1977 and 1987, Bilby 1993) points to the occurrence in paragoge of [i] as a default vowel, vowel copying (widespread), labial attraction and vowel harmony. Consider the examples below, illustrative of each of the cases identified:

(102) default vowel [i]
    lobi (E *love*) 'to love' (Hurault 1983, p. 2)
(103) vowel copying
    baáka (E *black*) 'black' (Hurault 1983, p. 22)

---
[18] See also Goury (2003, p. 42).
[19] See Bilby (1993).

(104) labial attraction
saápu (Hurault 1983, p. 25)
(105) vowel harmony
lošu (E *louse*) 'flea' (Hurault 1983, p. 26)

5.2.4.5 Conclusions

In light of the data presented in **5.2.4.1** through **5.2.4.4**, the history of paragoge in the creoles of Surinam appears less straightforward than hitherto assumed both by Smith (1977) and by Plag and Uffmann (2000).

On comparative grounds alone, since pre-1690 Sranan "feeds" Saramaccan, and pre-1712 Sranan "feeds" Ndyuka (and the latter Aluku), paragoge with vowel copying, labial attraction and rounding vowel harmony would have to be posited for pre-1690 Sranan, the earliest split (see Smith 1977 and 1999a). However, positing these types of paragoge in pre-1690 Sranan, does not work either, as there are no traces in Sranan of vowel copying, rounding vowel harmony and labial attraction before 1745, 1783 and 1781 respectively.

Evidence from 18th century Sranan points to paragoge with the default vowel [e], later with [e] and [i], gradually giving way to vowel copying, by 1745. Paragoge with rounding vowel harmony emerges by 1783, and with labial attraction, by 1781. In its turn, 18th century Saramaccan appears to have gone through the same stages, in approximately the same period. Both modern Ndyuka and modern Aluku exhibit types of paragoge which are identical to those of Sranan and Saramaccan. It would appear that four different creoles undergo, after the splits, the same three internal developments from paragoge with default vowels to vowel copying, labial attraction and rounding vowel harmony. This is certainly not an impossible scenario, but it is not necessarily a plausible one. In particular, on this view, Ndyuka must have gone somewhat more rapidly through these stages, i.e. by 1775, before the split between itself and Aluku. Finally, Sranan and Saramaccan rather curiously undergo the same changes in more or less the same period.

A third possibility would assume the effects of language contact occurring later, i.e. after the splits. On this analysis, the changes towards vowel copying, labial attraction and vowel harmony spread from one variety to the other. However, while contacts between Ndyuka and Aluku do occur, no such case can be made for Sranan, Saramaccan and Ndyuka. In addition, even if such a scenario is envisaged, no source language can be identified. There are no 18th century records of Ndyuka and Aluku, and as for Sranan and Saramaccan, the developments at issue occur at approximately the same time.

I do not have an answer to the questions raised by paragoge in the creoles of Surinam. This issue will have to await the results of further research.

5.2.5 Jamaican

The data analysed below are from Russell (1868), Lalla (1986), D'Costa and Lalla (1989), Lalla and D'Costa (1990), McLean (1996), and Parkvall and Edlund (1997–1998). The fairly large body of data covers the period from 1790 to 1912.

The treatment of complex codas is illustrated by the following forms in the corpus at my disposal (see also **Appendix 5**):

(106) /pt/
1868 *cep* (E *except*) 'except' (Russell 1868)
(107) /ft/
1844 *lef* (E *left*) 'left' (D'Costa and Lalla 1989, p. 91)
(108) /nt/
late 18th c. *wantee* (E *want*) 'to want' (McLean 1996, p. 47)
(109) /nd/
early 19th c. *an'* (E *and*) 'and' (D'Costa and Lalla 1989, p. 29)
(110) /ld/
1844 *worl*[20] (E *world*) 'world' (D'Costa and Lalla 1989, p. 94)
(111) /rs/
1790 *rassa*[21] (E *arse*) 'arse' (D'Costa and Lalla 1989, p. 14)
(112) /st/
1803 *mus* (E *must*) 'must' (Parkvall and Edlund 1997–1998)

As can be seen, the overwhelming majority of early Jamaican reflexes of complex codas ending in the [CORONAL] stop /t/ or /d/ undergo deletion of the latter. The constraint hierarchy is therefore:

(113) *CODA/C+t/d, DEP-IO, CONTIGUITY >> MAX-IO, RIGHT-ANCHOR

This ranking ensures the selection of e.g. [res] as the optimal output, given the input *rest*, as shown in the evaluation below:

[20] I assume for this form an *r*-less etymon.

[21] Both this and the 1868 citation obtain via metathesis from what must have been an etymon with post-vocalic /r/. They are discussed here together with reflexes of simple codas.

(114)

/rɛst/	*CODA/C+t/d	DEP-IO	CONTIG	MAX-IO	R-ANCHOR
rest	*!				
☞ res				*	*
ret			*	*	
res.ti		*!			*
re.sit		*!			

There is just one form in my corpus, *wantee* (E *want*) 'to want', which unexpectedly displays paragoge instead of the prevalent deletion of the [CORONAL] stop /t/. Now, this may be an inaccurate transcription, perhaps influenced by the frequent occurrence of paragoge in reflexes of simple codas (for which see below). On the other hand, paragoge may have been occasionally resorted to for the reduction of complex codas as well. If so, the form *wantee* 'to want' can be accounted for by the constraint hierarchy:

(115) *CODA/C+t/d, MAX-IO, CONTIGUITY >> DEP-IO, RIGHT-ANCHOR

Tableau (116) shows the evaluation of outputs for the input *want*:

(116)

/wɒnt/	*CODA/C+t/d	MAX-IO	CONTIG	DEP-IO	R-ANCHOR
want	*!				
wan		*!			*
wat		*!	*		
☞ wan.ti				*	*
wa.nit			*!	*	

Some speakers of early Jamaican may have extended paragoge to other types of complex codas in the etyma. Thus, Lalla (1986) lists two other early Jamaican forms, unfortunately not dated[22], in which a complex coda is reduced via paragoge:

(117) /ŋk/
pre-1900 *junka* (E *junk*) 'to junk' (Lalla 1986, p. 127)
pre-1900 *winkie* (E *wink*) 'to wink' (Lalla 1986, p. 127)

It may be that for such speakers, all complex codas in the etyma are resolved via paragoge. If so, the relevant constraint is *COMPLEXCODA, which together with MAX-IO and CONTIGUITY outrank DEP-IO, RIGHT-ANCHOR:

(118) *COMPLEXCODA, MAX-IO, CONTIGUITY >> DEP-IO, RIGHT-ANCHOR

Here is the evaluation for the input *wink*:

[22] Listed among various 18th and 19th century forms displaying paragogic vowels (Lalla 1986, p. 127).

(119)

/wɪŋk/	*COMPLEXCODA	MAX-IO	CONTIG	DEP-IO	R-ANCHOR
wiŋk	*!				
wiŋ		*!			
wik		*!			*
☞ wiŋ.ki				*	*
wi.nik			*!	*	

As for early Jamaican reflexes of simple codas, consider the following attestations:

(120) /f/
pre-1900 *teevee* (E *thief*) 'to steal' (Lalla 1986, p. 127)

(121) /t/
1790 *bitty* (E *bit*) 'seven pence half penny' (D'Costa and Lalla 1989, p. 13)
1823 *wharra*[23] (E *what*) 'what' (D'Costa and Lalla 1989, p. 41)
1868 *dari*[24] (E *that*) 'that' (Russell 1868)
1868 *wara* (E *what*) 'what' (Russell 1868)[25]

(122) /d/
1733 *goodee* (E *good*) 'good' (Parkvall and Edlund 1997–1998)

(123) /n/
1817 *drowny* (E *drown*) 'to drown' (D'Costa and Lalla 1989, p. 33)

(124) /r/
early 19th c. *yerry* (dial E *year*) 'to hear' (McLean 1996, p. 51)

(125) /tʃ/
1823 *preachy* (E *preach*) 'to preach' (D'Costa and Lalla 1989, p. 39)

(126) /k/
1823 *speakee* (E *speak*) 'to speak' (D'Costa and Lalla 1989, p. 42)

(127) /g/
1823 *floggee* (E *flog*) 'to flog' (D'Costa and Lalla 1989, p. 42)

(128) /ŋ/
1788 *bringee* (E *bring*) 'to bring' (D'Costa and Lalla 1989, p. 36)

Unlike early Barbadian (see **5.2.1**), early Saint Kittitian (**5.2.2**) and early Guyanese (**5.2.3**), *ORALCODA need not be posited for early Jamaican. Indeed, the form *drowny* 'to drown' indicates that [+nasal] codas too are subject to paragoge. The occurrence of paragoge has not gone unnoticed in previous research on early Jamaican. Thus, Cassidy (1961, p. 47) writes that "[t]he older stages of Jamaican folk English had a feature that has almost disappeared today: the tendency to add /-i/ or /-a/ to words that would otherwise end with a consonant"[26]. Lalla (1986, p. 127) notes that "[f]inal vowels are regularly added in 18th and

[23] With the flap [ř] as an intervocalic reflex of E /t/.
[24] Cf. Sranan *dati* (E *that*) 'that', but without the flap [ř].
[25] Russell (1868) states that "*wara* [...] is now nearly obsolete".
[26] Some of his examples of paragoge are derived from other etyma: /doti/ 'dirt' (E *dirty* and/or Akan *dɔti*), /grandi/ (P *grande*), /rata/ (Central American Spanish *rata*).

19th century records". What has not been satisfactorily accounted for, to the best of my knowledge, is the nature of the paragogic vowel. Cassidy (1961, p. 47), for one, suggests that the choice of paragogic [a] or [i] is random. In her turn, Lalla (1986, p. 128) claims that "[i]n the archaic creole preserved in texts of early Jamaican speech [...] some tendency towards vowel harmony can still be traced in intrusive final vowels".

A closer examination of the data, however, points to a different conclusion. The most favoured paragogic vowel appears to be [i]. In other words, [i] is the default paragogic vowel. Forms with the default paragogic vowel [i] can be dealt with as follows. The constraint NoCoda must be ranked high and so is Max-IO, since resolution of illicit simple codas via deletion is not permitted either. Both constraints dominate Dep-IO and Right-Anchor. Forms exhibiting the default paragogic vowel [i] obtain from the following ranking:

(129) NoCoda, Max-IO >> Dep-IO, Right-Anchor

Consider the illustration in the tableau below of this ranking, given the input *dead*:

(130)

/dɛd/	NoCoda	Max-IO	Dep-IO	R-Anchor
ded	*!			
de		*!		*
☞ de.di			*	*

Paragogic [i] in several of the forms listed above, e.g. *bitty*, may equally well be interpreted as an instance of vowel copying, given that the vowel to the left is also /i/. As for paragogic [a], it is attested in *junka* 'junk, *lak-a* 'like, as', *rassa* 'arse', /uona/ 'own', and in the reflex of E *what* with a flap [ř], transcribed *wara*, *warra*, *whara* or *wharra*. Except for /uona/, which is admittedly left unaccounted for, I would like to claim that the other cases also illustrate vowel copying. Vowel copying, then, not vowel harmony (as with Lalla 1986, p. 128), appears to have been an alternative option, although this strategy is more rarely resorted to. The relevant constraint hierarchy is:

(131) NoCoda, Max-IO, Copy >> Dep-IO, Right-Anchor

Tableau (132) shows the evaluation for the input /ars/. Note that the Jamaican form *rassa* also involves metathesis:

(132)

/ars/	NoCoda	Max-IO	Copy	Dep-IO	R-Anchor
ras	*!				
ra		*!			*
ra.si			*!	*	*
☞ ra.sa				*	*

5.3 Modern Atlantic English pidgins and creoles

5.3.1 Ghanaian Pidgin English

5.3.1.1 Uneducated Ghanaian Pidgin English

According to Huber (1999b, p. 174), in what he calls uneducated Ghanaian Pidgin English "syllables are often regularized towards a CV structure either by elision of one member in consonant clusters, or by insertion of [a] paragogic vowel".

Consider first the fate of complex codas, noting that the examples provided by Huber consist only of sequences of a consonant followed by the [CORONAL] stop /t/ or /d/:

(133) /nd/
[fain] (E *find*) 'to find' (Huber 1999b, p. 174)
[graund] (E *ground*) 'ground' (Huber 1999b, p. 174)

Notice that Huber's sweeping claim that "syllables are often regularized towards a CV structure" is not borne out by the data, since the uneducated Ghanaian Pidgin English forms still have a coda, albeit a simple one.

(134) *COMPLEXCODA, DEP-IO, CONTIGUITY >> MAX-IO, RIGHT-ANCHOR

The suggested ranking is illustrated in the following tableau:

(135)

/faind/	*COMPLEXCODA	DEP-IO	CONTIG	MAX-IO	R-ANCHOR
faind	*!				
☞ fain				*	*
faid			*	*	
fain.dɛ		*!			*
fai.nɛd		!	*		

The treatment of simple codas is exemplified by forms such as the following:

(136) /t/
[fait$^{\varepsilon}$] (E *fight*) 'to fight' (Huber 1999b, p. 174)
(137) /d/
[gaid$^{\varepsilon}$] (E *guide*) 'guide' (Huber 1999b, p. 174)
(138) /k/
[mek$^{\varepsilon}$] (E *make*) 'to make' (Huber 1999b, p. 174)

Simple codas consisting of a [+nasal] consonant do not trigger paragoge, which presupposes the effects of *ORALCODA. Reflexes of simple codas, then, can be accounted for in terms of the following constraint hierarchy:

(139) *ORALCODA, MAX-IO >> DEP-IO, R-ANCHOR

Consider, for instance, the evaluation for the input *guide*:

(140)

/gaid/	*ORALCODA	MAX-IO	DEP-IO	R-ANCHOR
gaid	*!			
gai		*!		
☞ gai.dɛ			*	*

As can be seen, uneducated Ghanaian Pidgin English resorts to a default paragogic vowel, namely [ɛ]. Finally, note that phonetically, according to Huber (1999b, p. 174), "the intrusive [= paragogic] vowel is considerably shorter than other vowels in the same word".

5.3.1.2 Jargonized Ghanaian Pidgin English

Another variety, labelled jargonized Ghanaian Pidgin English by Huber (1999b), appears to resemble Ghanaian Pidgin English in the treatment of etyma with codas. Complex codas undergo cluster reduction via deletion, as shown by the example below:

(141) /sk/

has (E *ask*) 'to ask' (Huber 1999b, p. 282)

This illustrates the effects of the ranking posited, in (134), for Ghanaian Pidgin English too:

(142) *COMPLEXCODA, DEP-IO, CONTIGUITY >> MAX-IO, RIGHT-ANCHOR

The candidates for the input *ask* are evaluated in the following tableau:

(143)

/a:sk/	*COMPLEXCODA	DEP-IO	CONTIG	MAX-IO	R-ANCHOR
hask	*!				
☞ has				*	*
hak			*!	*	
has.ki		*!			*
ha.sik		*!	*		

As for reflexes of etyma ending in a simple coda, Huber (1999b, p. 281) notes that "[a] large number of words show the presence of paragogic vowels". This is confirmed by examples such as:

(144) /f/

ifi (E *if*) 'if' (Huber 1999b, p. 282)

(145) /t/

putɛ (E *put*) 'to put' (Huber 1999b, p. 282)

wati (E *what*) 'what' (Huber 1999b, p. 282)

(146) /ʧ/

tiʧi (E *teach*) 'to teach' (Huber 1999b, p. 282)

(147) /k/

laiki (E *like*) 'like' (Huber 1999b, p. 282)

Note that, as in uneducated Ghanaian Pidgin English, simple codas ending in a [+nasal] consonant do not trigger paragoge. The jargonized Ghanaian Pidgin English forms, then, reflect the following constraint hierarchy:

(148) *ORALCODA, MAX-IO >> DEP-IO, RIGHT-ANCHOR

In tableau (149) I show the evaluation for the input form *if*:

(149)

/if/	*ORALCODA	MAX-IO	DEP-IO	R-ANCHOR
if	*!			
i		*!		
☞ i.fi			*	*

Huber (1999b) does not address the issue of the quality of the paragogic vowel. Judging by the examples listed above, jargonized Ghanaian Pidgin English resembles the uneducated variety in that it selects a default paragogic vowel. However, unlike in the latter, in which [ɛ] is the default paragogic vowel (see **5.3.1.1**), jargonized Ghanaian Pidgin English chooses [i]. The form *putɛ* 'put', with paragogic [ɛ] is an apparent counterexample, but it may well illustrate interference from the uneducated variety. Finally, according to Huber (1999b, p. 281) there is another difference between the jargonized and the uneducated varieties of Ghanaian Pidgin English. In the former, paragogic vowels "generally have the same length as the etymological vowels in the word, whereas paragogic vowels in […] uneducated Gha PE [= Ghanaian Pidgin English] are normally shorter and weakened in their articulation".

5.3.2 Nigerian Pidgin English

5.3.2.1 Pidgin Proper

On the basis of the forms found in Agheyisi (1984), it can be safely concluded that this variety of Nigerian Pidgin English disallows complex codas made up of a consonant followed by the [CORONAL] stop /t/ or /d/:

(150) /nd/
kain (E *kind*) 'kind' (Agheyisi 1984, p. 216)
main (E *mind*) 'to mind' (Agheyisi 1984, p. 217)

(151) /st/
jɔs (E *just*) 'just' (Agheyisi 1984, p. 216)

Such forms, then, reflect a ranking in which the constraint *CODA/C+t/d is undominated. The constraint hierarchy is:

(152) *Coda/C+t/d, Dep-IO, Contiguity >> Max-IO, Right-Anchor

The effect of this ranking is illustrated by the following evaluation:

(153)

/dʒʌst/	*Coda/C+t/d	Dep-IO	Contig	Max-IO	R-Anchor
dʒɔst	*!				
☞ dʒɔs				*	*
dʒɔt			*!	*	
dʒɔs.ti		*!			*
dʒɔ.sit		*!	*		

Let me turn now to reflexes of etyma with a simple coda (see also **Appendix 6**):

(154) /p/

silipi (E *sleep*) 'to sleep' (Agheyisi 1984, p. 227)

(155) /t/

fiti (E *fit*) 'to be able' (Agheyisi 1984, p. 227)

(156) /d/

gudu (E *good*) 'good' (Agheyisi 1984, p. 227)

(157) /dʒ/

maneji (E *manage*) 'manage' (Agheyisi 1984, p. 216)

(158) /s/

bɔsi (E *boss*) 'bus' (Agheyisi 1984, p. 227)

(159) /k/

teki (E *take*) 'to take' (Agheyisi 1984, p. 227)
waka (E *walk*) 'to walk' (Agheyisi 1984, p. 227)
wɔku (E *work*) 'to exercise' (Agheyisi 1984, p. 227)

(160) /g/

bigi (E *big*) 'big' (Agheyisi 1984, p. 227)

First, as can be seen, reflexes of etyma ending in a [+nasal] consonant do not exhibit paragoge. It follows that *OralCoda imposes the non-occurrence of [-nasal] consonant in reflexes of simple codas is undominated in Pidgin Proper. Second, in Pidgin Proper there is variation in the choice of the paragogic vowel.

Thus, a number of forms display the default paragogic vowel [i]. For these, the relevant ranking is therefore:

(161) *OralCoda, Max-IO >> Dep-IO, Right-Anchor

This ranking ensures, for instance, the selection of [teki] as the optimal output given the input /teik/:

(162)

/teɪk/	*ORALCODA	MAX-IO	DEP-IO	R-ANCHOR
tek	*!			
te		*!		
☞ te.ki			*	*

Other forms are instances of vowel copying. In such cases, COPY needs to be added to the constraint hierarchy:

(163) *ORALCODA, MAX-IO, COPY >> DEP-IO, RIGHT-ANCHOR

The evaluation below supports the ranking suggested:

(164)

/wɔk/	*ORALCODA	MAX-IO	COPY	DEP-IO	R-ANCHOR
wak	*!				
wa		*!			
wa.ki			*!		
☞ wa.ka				*	*

Finally, in still other forms, the selection of the paragogic vowel is dictated by vowel harmony, whereby a [LABIAL] vowel imposes the selection of the [LABIAL] vowel [u] as the paragogic vowel. The occurrence of [u] as a paragogic vowel can be captured by the constraint HARMONY. The ranking of constraints is:

(165) *ORALCODA, MAX-IO, HARMONY >> DEP-IO, RIGHT-ANCHOR

The effect of vowel harmony is illustrated by the evaluation below:

(166)

/wəːk/	*ORALCODA	MAX-IO	HARM	DEP-IO	R-ANCHOR
wɔk	*!				
wɔ		*!			
wɔ.ki			*!	*	*
☞ wɔ.ku				*	*

5.3.2.2 Yoruba Nigerian Pidgin English

The second variety of Nigerian Pidgin English that I analyse is that spoken by the Yorubas. Yoruba Nigerian Pidgin English has been described in Barbag-Stoll's (1983) monograph, from which the relevant examples below are taken.

The treatment of complex codas is illustrated by forms such as the following (see also **Appendix 7**):

(167) /mp/
/pompu/ (E *pump*) 'pump' (Barbag-Stoll 1983, p. 66)

(168) /ft/
/lef/ (E *left*) 'left' (Barbag-Stoll 1983, p. 62)
(169) /nt/
/difren/ (E *different*) 'different' (Barbag-Stoll 1983, p. 62)
(170) /nd/
/ben/ (E *bend*) 'to bend' (Barbag-Stoll 1983, p. 62)
(171) /ld/
/bil/ (E *build*) 'to build' (Barbag-Stoll 1983, p. 62)
(172) /lp/
/helep/ (E *help*) 'help' (Barbag-Stoll 1983, p. 65)
(173) /lk/
/milik/ (E *milk*) 'milk' (Barbag-Stoll 1983, p. 65)
(174) /st/
/res/ (E *rest*) 'to rest' (Barbag-Stoll 1983, p. 63)
(175) /ŋk/
/banki/ (E *bank*) 'bank' (Barbag-Stoll 1983, p. 66)

Clearly, the reflexes of complex codas depend on their make up. Consequently, they cannot be captured by the general constraint *COMPLEXCODA.

For reflexes of etyma with a complex coda made up of a consonant and the [CORONAL] stop /t/ or /d/, Barbag-Stoll (1983, p. 63), who works in a rule-based framework, posits the following rule:

(176) $C_{dental} \rightarrow Ø$ C_ ##

The above rule is the equivalent of my constraint *CODA/C+t/d/, already introduced. The hierarchy of constraints accounting for the Yoruba Nigerian Pidgin English forms at issue is:

(177) *CODA/C+t/d, DEP-IO, CONTIGUITY >> MAX-IO, RIGHT-ANCHOR

Consider, for example, the evaluation below:

(178)

/lɛft/	*CODA/C+t/d	DEP-IO	CONTIG	MAX-IO	R-ANCHOR
left	*!				
☞ lef				*	*
let			*!	*	
lef.ti		*!			*
le.fit		*!	*		

Forms such as /helep/ 'help' or /milik/ 'milk' show that coda clusters can also be reduced via epenthesis. The clusters at issue are made up of the [+lateral] liquid /l/ and a stop. I would like to suggest that such clusters violate the constraint *CODA/LS. This constraint plays a role in other English-based pidgins (see **5.4.1** and **5.4.2**). The epenthetic vowel is a copy of the vowel preceding the original coda cluster. This is enforced by the constraint COPY. *CODA/LS and COPY crucially dominate DEP-IO and CONTIGUITY:

(179) *CODA/LS, MAX-IO, RIGHT-ANCHOR, COPY >> DEP-IO, CONTIGUITY

Consider the evaluation in the tableau below:

(180)

/hɛlp/	*CODA/LS	MAX-IO	R-ANCHOR	COPY	DEP-IO	CONTIG
help	*!					
hel		*!	*			
hep		*!				*
hel.pi			*!		*	
he.lip				*!	*	*
☞ he.lep					*	*

Coda clusters of the type [+nasal] plus a stop are also disallowed. A further well-formedness constraint is needed, namely *CODA/NS:

(181) ***CODA/NS**: a cluster made up of a [+nasal] and a stop is not a permissible coda.

Again, there is independent evidence, from Pacific English-based pidgins and creoles, for this constraint (see **5.4.3**). As can be seen these clusters trigger paragoge. Disregarding for now the nature of the paragogic vowel (for which see below), /i/ or /u/, I assume, for both cases, the following constraint hierarchy:

(182) *CODA/NS, MAX-IO, CONTIGUITY >> DEP-IO, RIGHT-ANCHOR

This ranking ensures the emergence of e.g. [baŋki] as the optimal output:

(183)

/bæŋk/	*CODA/NS	MAX-IO	CONTIG	DEP-IO	R-ANCHOR
baŋk	*!				
baŋ		*!			*
bak		*!			
ba.nik			*!	*	
☞ baŋ.ki				*	*

Consider next reflexes of etyma with simple codas:

(184) /f/
/afu/ (E *half*) 'half' (Barbag-Stoll 1983, p. 62)

(185) /t/
/rutu/ (E *root*) 'root' (Barbag-Stoll 1983, p. 66)

(186) /d/
/lɔdu/ (E *load*) 'load' (Barbag-Stoll 1983, p. 66)

(187) /s/
/kisi/ (E *kiss*) 'to kiss' (Barbag-Stoll 1983, p. 66)

(188) /ʤ/
/ʤoʤi/ (E *judge*) 'judge (Barbag-Stoll 1983, p. 66)

(189) /k/

/keki/ (E *cake*) 'cake' (Barbag-Stoll 1983, p. 66)

(190) /ŋ/

nyongi[27] (E *young*) 'young' (Barbag-Stoll 1983, p. 54)

The examples above show that etyma with simple codas consisting of a [-nasal] consonant are adjusted via paragoge, which suggests the effects of *ORALCODA. As Pidgin Proper (see **5.3.2.1**), Yoruba Nigerian Pidgin English exhibits variation in the paragogic vowel.

In what follows I would like to analyse the factors determining the paragogic vowel, since previous discussions have failed to account for all the cases of paragoge. Thus, Barbag-Stoll (1983, pp. 65–66), identifies just two types of paragoge. One type consists of the "addition of a vowel at the end of the word, copying the preceding root vowel" (Barbag-Stoll 1983, p. 65). All other instances of paragoge are lumped together under the heading "addition of a vowel which does not copy the root vowel", but "there seems to be no regular pattern for the epenthetic vowel" (Barbag-Stoll 1983, p. 66). More specifically, the following relationships between the "root vowel" and the "epenthetic vowel" are established (Barbag-Stoll 1983, p. 66):

(191)

root vowel	epenthetic vowel
/i/	→ /i/
/e/	→ /i/ or /e/
/ʌ/	→ /a/, /u/ or /i/
/ɔ/, /o/	→ /u/ or /i/
/a/	→ /u/

Confronted with this diversity of paragogic vowels, Barbag-Stoll (1983, p. 67) proposes that "[t]he nature of this process can be explained in two ways". Her first proposal runs as follows: "assuming an incompletely specified V, which is subjected to various phonological rules in order to reach the various surface structure forms in which the vowel may appear". However, none of the phonological rules mentioned is formulated. The alternative account would reside in "choosing one of the actually occurring vowels as the underlying forms of the epenthetic vowel and deriving all the other forms from this [vowel]" (Barbag-Stoll 1983, p. 67). Note, first, the arbitrariness in the selection of one paragogic vowel as underlying since no reasons for the choice of a particular vowel are given. Second, the derivation of "all

[27] Where *ny* represents a palatal nasal. Reflexes of *young* with an initial nasal palatal are quite frequent in the Atlantic English pidgins and creoles (see Baker 1999, pp. 322 and 328).

other forms from this [vowel]" is not even outlined. Barbag-Stoll's (1983) analysis focusses exclusively on what the author calls the "root vowel". This makes it possible for her to correctly identify only one type of paragoge, namely vowel copying. However, the effect of the related phenomenon of vowel harmony goes unnoticed by her. In addition, the potential influence of the nature of the final consonant in the etyma is not even considered.

In fact, the selection of the paragogic vowel is subject to identifiable factors. One possibility is the default vowel [i], dealt with by the constraint hierarchy below:

(192) *ORALCODA, MAX-IO >> DEP-IO, RIGHT-ANCHOR

This ranking ensures the selection of [keki] as the optimal output given the input /teik/:

(193)

/keik/	*ORALCODA	MAX-IO	DEP-IO	R-ANCHOR
kek	*!			
ke		*!		
☞ ke.ki			*	*

Vowel copying, identified by Barbag-Stoll (1983, p. 65) as well, reflects the following ranking:

(194) *ORALCODA, MAX-IO, COPY >> DEP-IO, RIGHT-ANCHOR

Consider, e.g., the evaluation in the tableau below:

(195)

/ru:t/	*ORALCODA	MAX-IO	COPY	DEP-IO	R-ANCHOR
rut	*!				
ru		*!			
ru.ti			*!		
☞ ru.tu				*	*

Still other instances of paragoge illustrate vowel harmony. A [LABIAL] vowel may be conducive to the selection of [u] as the paragogic vowel. In such cases, then, it is the constraint HARMONY that determines the nature of the paragogic vowel:

(196) *ORALCODA, MAX-IO, HARM >> DEP-IO, RIGHT-ANCHOR

Tableau (197) sets out the evaluation of potential output forms for the input *load*:

(197)

/ləʊd/	*ORALCODA	MAX-IO	HARM	DEP-IO	R-ANCHOR
lɔd	*!				
lɔ		*!			
lɔ.di			*!	*	*
☞ lɔ.du				*	*

Further, the consonant in the simple coda of the etymon may also play a role in the choice of the paragogic vowel. Thus, a [LABIAL] consonant may lead to the selection of the [LABIAL] vowel [u]. The relevant constraint is C_{LAB}-V_{LAB}, which outranks DEP-IO and RIGHT-ANCHOR:

(198) *ORALCODA, MAX-IO, C_{LAB}-V_{LAB} >> DEP-IO, RIGHT-ANCHOR

Given e.g. the input /hɑ:f/, it is the form [afu] that emerges as the winner:

(199)

/hɑ:f/	*ORALCODA	MAX-IO	C_{LAB}-V_{LAB}	DEP-IO	R-ANCHOR
af	*!				
a		*!			
a.fi			*!	*	*
☞ a.fu				*	*

Finally, note the existence of undecidable cases. In e.g. /pompu/ paragogic [u] may be selected by the [LABIAL] /o/ or, equally well, by the final [LABIAL] consonant /p/.

In conclusion, despite the considerable variability attested, paragoge in Yoruba Nigerian Pidgin English is subject to identifiable constraints.

5.4 Early Pacific English pidgins and creoles

5.4.1 Tok Pisin

The treatment of etyma with codas in early Tok Pisin is, judging by the relevant forms attested in Hall (1943) and Murphy (1966)[28], rather straightforward. Complex codas are disallowed across the board while simple codas do occur. The analysis that follows is therefore limited to the adjustments undergone by etyma with complex codas.

Consider the reflexes of etyma with complex codas listed below (and in **Appendix 8**):

(200) /mp/
  1943 *lam* (E *lamp*) 'lamp' (Murphy 1966, p. 78)

(201) /ft/
  1943 *drif* (E *drift*) 'to drift' (Hall 1943, p. 95)

(202) /lt/
  1943 *sol* (E *salt*) 'salt' (Murphy 1966, p. 95)

(203) /ld/
  1943 *gol* (E *gold*) 'gold' (Hall 1943, p. 98)

(204) /lk/
  1943 *melek* (E *milk*) 'semen' (Murphy 1966, p. 83)[29]

---

[28] This is the second edition of the book, first published in 1943. It thus reflects the Tok Pisin of the 1940s.

[29] Cf. the similar form in early Bislama, *milik* (see **5.4.2**), which preserves the meaning of the etymon.

(205) /nt/
1943 *pein* (E *paint*) 'paint' (Murphy 1966, p. 86)
(206) /nd/
1943 *ailan* (E *island*) 'island' (Murphy 1966, p. 58)
(207) /ns/
1943 *banis* (E *fence*) 'fence' (Murphy 1966, p. 59)
(208) /ntʃ/
1943 *winis* (E *winch*) 'winch' (Murphy 1966, p. 102)
(209) /ndʒ/
1943 *senis* (E *change*) 'to change place' (Murphy 1966, p. 92)
(210) /st/
1943 *bros* (G *Brust*) 'chest' (Murphy 1966, p. 63)
(211) /sk/
1943 *kas* (E *cask*) 'cask' (Murphy 1966, p. 74)
(212) /kt/
1943 *kontræk* (E *contract*) 'contract' (Hall 1943, p. 105)
(213) /ks/
1943 *akis* (E *axe*) 'axe' (Murphy 1966, p. 58)

As can be seen, however, complex codas are not treated uniformly and therefore cannot be accounted for in terms of the constraint *COMPLEXCODA. Coda clusters consisting of a consonant followed by a stop violate the undominated constraint *CODA/CS and are simplified through deletion of the stop. This reflects the effects of the constraint hierarchy below:

(214) *CODA/CS, DEP-IO, CONTIGUITY >> MAX-IO, RIGHT-ANCHOR

Given e.g. the input *lamp*, the candidate [lam] emerges as the winner:

(215)

/læmp/	*CODA/CS	DEP-IO	CONTIG	MAX-IO	R-ANCHOR
lamp	*!				
☞ lam				*	*
lap			*!	*	
lam.pi		*!			*
la.mip		*!	*		

On the other hand, coda clusters containing a consonant followed by a fricative or an affricate are broken up by anaptyxis into the cluster. The intrusive vowel is always [i], the default epenthetic vowel in Tok Pisin. The relevant well-formedness constraint is *CODA/CF, which outranks DEP-IO and CONTIGUITY:

(216) *CODA/CF, MAX-IO, RIGHT-ANCHOR >> DEP-IO, CONTIGUITY

This ranking is supported by the following tableau (217):

(217)

/wintʃ/	*CODA/CF	MAX-IO	R-ANCHOR	DEP-IO	CONTIG
wins	*!				
win		*!	*		
wis		*!			*
win.si			*!	*	
☞ wi.nis				*	*

Finally, the form *melek* 'milk' illustrates the effects of the constraint *CODA/LS (see **5.2.2.2**). As can be seen, such coda clusters are simplified through the epenthesis of a copy of the vowel to the left. It follows that both *CODA/LS and COPY are undominated and crucially outrank DEP-IO and CONTIGUITY:

(218) *CODA/LS, MAX-IO, RIGHT-ANCHOR, COPY >> DEP-IO, CONTIGUITY

The corresponding evaluation is given in the following tableau:

(219)

/milk/	*CODA/LS	MAX-IO	R-ANCHOR	COPY	DEP-IO	CONTIG
melk	*!					
mel		*!	*			
mek		*!				*
mel.ke			*!		*	
me.lik				*!	*	*
☞ me.lek					*	*

5.4.2 Bislama

The corpus of data from early Bislama consists of the textual attestations in Crowley (1993 and 1998). The latter is a comprehensive list of words mostly attested in pre-World War I Bislama, to which a number of items occurring in somewhat later sources are added. In its treatment of etymological codas, early Bislama closely resembles Tok Pisin (section **5.4.1**).

Consider first the adjustment of complex codas in the etyma (see also **Appendix 9**):

(220) /lt/
 -1899 *saul* (E *salt*) 'salt' (Crowley 1998, p. 97)
(221) /ld/
 -1899 *col* (E *cold*) 'cold' (Crowley 1993, p. 82)
(222) /lk/
 1914 *milik*[30] (E *milik*) 'milk'
(223) /nt/
 -1899 *wane* [31] (E *want*) 'to want' (Crowley 1998, p. 102)

---

[30] The transcriber writes explicitly: "Milk pronounced milik" (Crowley 1998, p. 87).
[31] The French transcriber uses French orthographic conventions.

(224) /nd/
-1899 *graoun* (E *graound*) 'ground' (Crowley 1998, p. 76)
(225) /ns/
-1899 *baniche*[32] (E *fence*) 'fence' (Crowley 1993, p. 213)
1914 *fenys*[33] (E *fence*) 'fence' (Crowley 1998, p. 74)
(226) /nz/
-1899 *Ouanesday* (E *Wednesday*) 'Wednesday' (Crowley 1998, p. 103)
(227) /ntʃ/
-1919 *Frennich*[34] (E *French*) 'French' (Crowley 1998, p. 75)
(228) /ndʒ/
-1899 *oranige*[35] (E *orange*) 'orange' (Crowley 1993, p. 213)
(229) /st/
-1899 *holigos* (E *holy*, *ghost*) 'Holy Ghost' (Crowley 1998, p. 79)
(230) /ks/
-1899 *bokis* (E *box*) 'box' (Crowley 1998, p. 70)
(231) /gz/
-1899 *en'guis*[36] (E *eggs*) 'egg' (Crowley 1998, p. 73)

As in early Tok Pisin (see **5.4.1**), the composition of complex codas determines the way in which they are treated. Consequently, simply assuming the constraint *COMPLEXCODA would not explain the differences between the early Bislama reflexes. Thus, complex codas made up of a consonant and the [CORONAL] stop /t/ or /d/ undergo simplification via deletion of the latter. The constraint hierarchy is:

(232) *CODA/C+t/d, DEP-IO, CONTIGUITY >> MAX-IO, RIGHT-ANCHOR

Consider the evaluation in the following tableau:

(233)

/sɔ:lt/	*CODA/C+t/d	DEP-IO	CONTIG	MAX-IO	R-ANCHOR
solt	*!				
☞ sol				*	*
sot			*!	*	
sol.ti		*!			*
so.lit		*!	*		

If the second member of the complex coda is a fricative, the cluster is broken up by epenthesis, showing the effect of the following hierarchy of constraints:

[32] Presumably [banis]. Cf. early Tok Pisin *banis* (Murphy 1966, p. 59).
[33] The transcriber writes explicitly: "Fence pronounced fenys" (Crowley 1998, p. 75).
[34] Presumably [frenis]. Cf. modern Bislama *Pranis* or *Franis* (Guy 1974, p. 146).
[35] Presumably [oranis]. Cf. modern Bislama *aranis* (Crowley 1993, p. 213).
[36] With a [+nasal] velar reflex [ŋ] of the original [-nasal] one /g/.

(234) *CODA/CF, MAX-IO, RIGHT-ANCHOR >> DEP-IO, CONTIGUITY

The candidate [eɲis], for instance, emerges as the optimal output:

(235)

/ɛgz/	*CODA/CF	MAX-IO	R-ANCHOR	DEP-IO	CONTIG
eɲs	*!				
eɲ		*!	*		
es		*!			*
eɲ.si			*!	*	
☞ e.ɲis				*	*

Finally, a form such as *milik* 'milk', reflects the effects of the undominated constraints *CODA/LS (see **5.2.2**) and COPY, which crucially dominate both DEP-IO and CONTIGUITY:

(236) *CODA/LS, MAX-IO, RIGHT-ANCHOR, COPY >> DEP-IO, CONTIGUITY

Consider the evaluation set out in tableau (237):

(237)

/milk/	*CODA/LS	MAX-IO	R-ANCHOR	COPY	DEP-IO	CONTIG
milk	*!					
mil		*!	*			
mik		*!				*
mil.ki			*!		*	
mi.lek				*!	*	*
☞ mi.lik					*	*

Early Bislama allows simple codas. Consider, however, the forms below:

(238) /p/
-1899 *supa* (E *soup* / F *soupe*) 'soup' (Crowley 1993, p. 214)
1914 *seepy* (E *sheep*) 'sheep'

(239) /l/
1912 *allersame* (E *all*, *same*) 'like, as' (Crowley 1998, p. 90)

(240) /k/
1914 *ta-ke-ter*[37] (E *doctor*) 'doctor' (Crowley 1998, p. 72)
-1919 *dokkitor* (E *doctor*) 'doctor' (Crowley 1998, p. 72)

(241) /ŋ/
-1919 *longa* (E *along*) 'because; to' (Crowley 1998, p. 84)

[37] The transcriber writes explicitly: "Doctor pronounced ta-ke-ter" (Crowley 1998, p. 72).

At first sight, the forms above seem to illustrate paragoge. However, there is some evidence indicating that some of these forms were imported as such into early Bislama. One such form is *longa*, well attested in late 19th century varieties of early Melanesian Pidgin English. Another likely candidate is *allersame*, where *er* represents, presumably, [e]. This is paralleled by the early Solomon Islands Pidgin form *allee same*, in which the *allee* stands, presumably, for [ali]. Other early Bislama forms with paragogic vowels were, at best, isolated cases, given that Bislama seems to have always permitted one consonant in the coda. Consider first *ta-keter* or *dokkitor*, most likely [takita] or [dokita] 'doctor', whose modern equivalent is [dokta] or [tokta]. As for *supa*, its current counterpart is *sup* (E *soup*) or *lasup* (F *la*, *soupe*) 'soup', with agglutination of the French definite article. Consider finally the form *seepy* [sipi] 'sheep'. As noted by Crowley (1998, p. 96), the fact that the current Bislama form is *sipsip*[38], which is also attested in Tok Pisin, "suggests that the reduplicated form had early currency, and that [the 1914] attestation of **sipi** represented a temporary development".

5.4.3 Solomon Islands Pidgin

The examples in early Solomon Islands Pidgin are mainly from Keesing (1988 and 1991b), and Jourdan and Keesing (1997). The corpus consists mostly of forms in the so-called "bush pidgin", since early records, especially pre-1900 ones, fail to reflect the treatment of etyma with codas. This does not detract, however, from the value of the data. Indeed, as noted by Goulden (1990, p. 54), "'bush' varieties of [Solomon Islands] Pijin [...] conserve archaic material".

The corpus at my disposal contains, unfortunately, just a small number of forms relevant to the treatment of complex codas:

(242) /mp/
siambu (E *jump*) 'to jump' (Jourdan and Keesing 1997, p. 409)

(243) /nt/
wande (E *want*) 'to want' (Jourdan and Keesing 1997, p. 409)

(244) /nd/
endi (E *end*) 'end' (Keesing 1991b, p. 322)

(245) /st/
tas (E *just*) 'just, only' (Keesing 1991b, p. 332)

(246) /ks/
1909 *bokkis*[39] (E *box*) 'box' (Keesing 1988, p. 278)

[38] Cf. early Bislama *pigpig* 'pig' (Crowley 1998, p. 92).
[39] Cf. early Tok Pisin *bokis* (**5.4.1**), and early Bislama *bokis* (**5.4.2**).

Tentatively, the above examples appear to indicate that coda clusters consisting of a [+nasal] and a stop are reduced by paragoge. Whether these sequences are realized phonetically as [mp], [nt], [nd] or rather as prenasalized stops (Lee 1999, p. 57) is irrelevant. This suggests the following constraint hierarchy, in which the *CODA/NS (introduced in **5.3.2.2**) dominates DEP-IO and RIGHT-ANCHOR:

(247) *CODA/NS, MAX-IO, CONTIGUITY >> DEP-IO, RIGHT-ANCHOR

This ranking ensures the emergence of e.g. [endi] as the optimal output:

(248)

/ænd/	*CODA/NS	MAX-IO	CONTIG	DEP-IO	R-ANCHOR
end	*!				
en		*!			*
ed		*!			
e.nid			*!	*	
☞ en.di				*	*

Complex codas made up of a [-nasal] consonant and the [CORONAL] stop /t/ or /d/ undergo simplification via deletion of the latter, given the following hierarchy of constraints:

(249) *CODA/C+t/d, DEP-IO, CONTIGUITY >> MAX-IO, RIGHT-ANCHOR

This ranking accounts for the emergence of e.g. [tas] as the winner, given the input /ʤʌst/:

(250)

/ʤʌst/	*CODA/C+t/d	DEP-IO	CONTIG	MAX-IO	R-ANCHOR
tast	*!				
☞ tas				*	*
tat			*!	*	
tas.ti		*!			*
ta.sit		*	*		

Finally, as in early Tok Pisin (**5.4.1**) and early Bislama (**5.4.2**), if the second member of the original complex coda is a fricative, the cluster is subject to epenthesis. The constraint *CODA/CF thus crucially dominates DEP-IO both and CONTIGUITY:

(251) *CODA/CF, MAX-IO, RIGHT-ANCHOR >> DEP-IO, CONTIGUITY

The constraint hierarchy in (251) is supported by the evaluation in tableau (252):

(252)

/bɔks/	*CODA/CF	MAX-IO	R-ANCHOR	DEP-IO	CONTIG
boks	*!				
bok		*!	*		
bos		*!			*
bok.si			*!	*	
bo.ki.si			*!	**	*
☞ bo.kis				*	*

Reflexes of etyma with simple codas are much better represented in my corpus of early Solomon Islands Pidgin (see also **Appendix 10**):

(253) /p/
antafu (E *on top*) 'up there' (Keesing 1991b, p. 332)
(254) /b/
sikarapu (E *scrub*) 'bush' (Jourdan and Keesing 1997, p. 409)
(255) /m/
finisitaimu[40] (E *finish*, *time*) 'worker whose indenture has elapsed' (Jourdan and Keesing 1997, p. 409)
(256) /v/
muvu (E *move*) 'to move' (Jourdan and Keesing 1997, p. 407)
(257) /t/
oraete (E *alright*) 'alright' (Keesing 1991b, p. 324)
(258) /l/
1920 *alle same*[41] (E *all*, *same*) 'like, as' (Keesing 1988, p. 280)
raeholo (E *rifle*) 'rifle' (Jourdan and Keesing 1997, p. 409)
(259) /n/
ana (E *and*[42]) 'and' (Jourdan and Keesing 1997, p. 407)
wanekaeni (E *one*, *kind*) 'to be (sg.)' (Jourdan and Keesing 1997, p. 409)
(260) /ʃ/
finisi (E *finish*) 'to finish' (Keesing 1991b, p. 324)
(261) /ʧ/
siosi (E *church*) 'church' (Jourdan and Keesing 1997, p. 411)
(262) /k/
tarake (E *truck*) 'truck' (Jourdan and Keesing 1997, p. 411)
(263) /g/
bikibiki[43] (E *pig*) 'pig' (Jourdan and Keesing 1997, p. 407)
(264) /ŋ/
longo (E *long*) 'long' (Jourdan and Keesing 1997, p. 406)

The forms listed show that there is great variation in the quality of the paragogic vowel. The most frequently attested case is that of vowel copying, accounted for by the constraint hierarchy:

(265) NoCoda, Max-IO, Copy >> Dep-IO, Right-Anchor

Consider the evaluation of candidates for the input *long*:

---

[40] Cf. early Tok Pisin *pinis taim* 'to complete a contract of service' (Murphy 1966, p. 87), *finištajm* 'who has finished his time (of indentured service)' (Hall 1943, p. 96).
[41] Cf. early Bislama *allersame* (Crowley 1998, p. 90).
[42] Paragoge suggests the absence of /d/ in the input. Cf. the alternative form *endi*. See also *wanekaeni*.
[43] Cf. early Bislama *pigpig* (Crowley 1998, p. 92).

(266)

/lɔŋ/	NoCoda	Max-IO	Copy	Dep-IO	R-Anchor
loŋ	*!				
lo		*!			*
lo.ŋe			*!	*	*
☞ lo.ŋo				*	*

If the reflex of the coda is a [LABIAL] consonant, this triggers the selection of [u], also [LABIAL], as the paragogic vowel:

(267) NoCoda, Max-IO, C_{LAB}-V_{LAB} >> Dep-IO, Right-Anchor

In tableau (268) I set out the evaluation for the input *time*:

(268)

/taɪm/	NoCoda	Max-IO	C_{LAB}-V_{LAB}	Dep-IO	R-Anchor
taim	*!				
tai		*!			
tai.mi			*!	*	*
☞ tai.mu				*	*

Note that the adjustment of a form such as *muvu* may equally well be accounted for in terms of Copy or of C_{LAB}-V_{LAB}, since either of these constraints would impose the selection of [u] as the paragogic vowel.

In addition, [e] or [i] seem to function as default paragogic vowels, as shown, for instance, by the form *tarake*. The constraint hierarchy is:

(269) NoCoda, Max-IO >> Dep-IO Right-Anchor

Consider the evaluation in the following tableau:

(270)

/trʌ k/	NoCoda	Max-IO	Dep-IO	R-Anchor
ta.rak	*!			
ta.ra		*!		*
☞ ta.ra.ke			*	*

5.5 Conclusions

This chapter has looked into the various ways in which the Atlantic and Pacific English pidgins and creoles treat etyma with complex and simple codas.

As has been shown, the constraint *ComplexCoda cannot adequately account for the resolution of illicit complex codas, since different coda clusters undergo different treatments. An analysis in terms of Son-Seq would not work either, since complex codas obeying it are also subject to simplification or reduction, again in different ways. Generally, two main strategies are used to resolve illegal complex codas: deletion of coda consonants and paragoge. The simplification of complex codas frequently involves the constraint *CODA/C+t/d. Anaptyxis into a coda cluster also occurs, in e.g. early Saint Kittitian Creole (**5.2.2**), early Guyanese Creole (**5.2.3**), modern Yoruba Nigerian Pidgin English (**5.3.2.2**), early Tok Pisin (**5.4.1**), early Bislama (**5.4.2**), and early Solomon Islands Pidgin (**5.4.3**). Depending on the particular variety, anaptyxis into a coda cluster is imposed by *CODA/CF or *CODA/LS.

Simple [+nasal] codas occur in most varieties. In some Atlantic English pidgins and creoles *ORALCOND bans [+nasal] consonants from coda position. The undominated constraint NOCODA prohibits all simple codas in Solomon Islands Pidgin (**5.4.3**).

The default paragogic vowel is [i] and/or [e]. Several varieties also exhibit paragoge with one or all of the following: vowel copying, labial attraction and vowel harmony, imposed by COPY, HARMONY and C_{LAB}-V_{LAB} respectively. The pidgins and creoles at issue are: early Saint Kittitian (**5.2.2**), the creoles of Surinam (**5.2.4.1–5.2.4.4**), early Jamaican (**5.2.5**), modern jargonized Ghanaian Pidgin English (**5.3.1.2**), the Pidgin Proper variety of modern Nigerian Pidgin English (**5.3.2.1**), modern Yoruba Nigerian Pidgin English (**5.3.2.2**), early Tok Pisin (**5.4.1**), early Bislama (**5.4.2**), and early Solomon Islands Pidgin (**5.4.3**). In these varieties, paragoge *cum* vowel copying tends to be the most widely attested type.

CONCLUSIONS

6.1 Introduction

In what follows I attempt to gather the various threads running through the present thesis. I focus on implications of some interest for phonological theory, the study of pidgins and creoles as well as on the relevance of the optimality-theoretic framework.

6.2 Markedness

Syllable restructuring in English pidgins and creoles has been shown in chapters **3**, **4** and **5** to involve deletion and various types of epenthesis and of paragoge. The findings generally confirm a number of claims in phonological theory, language typology and in the study of language contact. Discussed below are some of these.

Sonority sequencing effects have been shown (see chapters **3** and **4**) to play a role in the restructuring of onsets (see also sections **6.7** and **6.8**). In particular, the English pidgins and creoles analyzed provide additional evidence of the well known "exceptional" behaviour and/or status of the phoneme /s/ across languages (chapter **3**). It is the only segment in input onsets frequently subject to deletion, in violation of MAX-IO. Not surprisingly, other, universally less marked, obstruent + sonorant clusters (obstruent + glide and obstruent + liquid) have been shown to be preserved to a larger extent (chapter **4**). Alternatively, preservation of at least the segments in the input is secured even if at the cost of violating DEP-IO and CONTIGUITY. However, sonority distance is not (necessarily) a predictor of the treatment of etyma with /s/-initial onset clusters. Similar strategies, e.g. epenthesis may be resorted to in the case of both clusters disobeying SON-SEQ and of those violating it. Consequently, reference has been made to the constraint ONSSON as well (cf. also sections **6.7** and **6.8**).

The preference for deletion in the resolution of illicit /s/ + obstruent onset clusters but for epenthesis to resolve illegal codas containing /s/ accords well with the views on onset–coda asymmetries (see also section **6.7**). Another instantiation of onset-coda asymmetries is the occurrence of deletion in simple codas but not in simple onsets.

Most varieties analyzed permit [+nasal] codas even though the syllable structure is essentially CV, and even if their substrate languages disallow any codas. The English pidgins and creoles confirm a pattern long noticed, namely many languages with normally open syllables do allow [+nasal] coda consonants.

With respect to the nature of the epenthetic or paragogic vowel too the evidence from English pidgins and creoles supports previous findings. Diachronically, epenthetic or paragogic vowels lack input counterparts, i.e. they have no lexical feature specification to be faithful to. In other words, the constraint IDENT-IO is irrelevant and their featural realization is therefore due exclusively to output factors. This accounts for the fact that in most languages epenthetic or paragogic vowels tend to be minimally marked or underspecified segments. Under the circumstances, cross-linguistically it is featurally unmarked vowels such as [i] that are selected in epenthesis or paragoge. This is exactly what we find in the English pidgins and creoles investigated. On the other hand, epenthetic or paragogic segments may be context-sensitive, i.e. are subject to various sorts of assimilation. Context-sensitivity is a natural consequence of the fact that faithfulness constraints, such as IDENT-IO, play no part, since "intrusive" vowels lack an input. Indeed, cross-linguistically epenthetic or paragogic vowels do undergo contextual colouring. Again, this is what we find in English pidgins and creoles, e.g. epenthesis and/or paragoge with vowel copying (the effect of COPY), with vowel harmony (dictated by HARMONY), with transcategorial assimilation of the C-to-V type (enforced by C_{LAB}-V_{LAB}) or of the V-to-C type (imposed by V_{COR}-C_{COR}). In optimality-theoretic terms, this can be expressed by the following factorial typology of the nature of the epenthetic or paragogic vowel (see Kager 1999, pp. 125–126):

(1) Context-free markedness >> Context-sensitive markedness
Effect: epenthetic or paragogic vowel is minimally marked

(2) Context-sensitive markedness >> Context-free markedness
Effect: epenthetic or paragogic vowel is contextually coloured

Kager (1999, p. 126) also writes that the interaction of context-free and context-sensitive markedness constraints "will not usually result in a complete victory of one factor over the other, but a more fragmented picture will be presented, with contributions made by both". Once more, this is the situation of English pidgins and creoles. Except for Assimilated Cameroon Pidgin English (see **3.3.4** and **4.3.3**), which always selects the default epenthetic vowel [i], all the other varieties analyzed show both context-free and context-sensitive effects.

Mufwene (1990a, 1990b, 1991 and 2000, pp. 56–57) advocates what he calls an "ecology-sensitive model of markedness". On his analysis, markedness values are not predetermined by Universal Grammar, but by the structural and nonstructural factors, which give a selective advantage to one of the competing features, forms or structures. The occurrence of both default "intrusive" vowels and of assimilatory effects, including less frequent ones, is also consistent with this approach to markedness. Epenthesis with labial attraction, for example, may be universally marked, but it was less so if a majority of the participants in the contact situation did resort to this type of transcategorial assimilation.

Pidgins and creoles, in particular the Atlantic varieties, are often said to illustrate the preference for the CV syllable structure (see e.g. Holm 1988, pp. 110 and 217, and 2000, p. 142). This has been taken by many (e.g. Holm 1988, pp. 108 and 217, and 2000, p. 140) to reflect the fact that (many of) the relevant substrate languages have or favour a CV syllable structure. Two objections can be levelled at such a conclusion. First, as shown by the evidence from some of the English pidgins and creoles studied in chapters **3**, **4** and **5** (including Saramaccan and Aluku in their earlier stages), the case for the CV syllable structure has been overstated to some extent. Second, as is well known, CV is the universally unmarked syllable structure (see e.g. Blevins 1995). Therefore, "a universal explanation is also conceivable" (Plag and Uffmann 2000, pp. 309–310), i.e. on the basis of markedness considerations. Moreover, what has often been overlooked, I think, is the fact that syllables actually fall along a continuum of markedness, of more vs less marked rather than marked vs unmarked. Consequently, an even stronger case can be made, along the lines of Plag and Uffmann (2000), for the role of universals. That is, the emergence independently of transfer effects of less marked, not necessarily of the least marked, syllable structures, can be attributed to markedness universals (see also **6.7**). In optimality-theoretic terms, this is an instance of the emergence of the unmarked (McCarthy and Prince 1994).

Consider also the issue of deletion vs. epenthesis or paragoge. As shown by Singh and Muysken (1995), deletion is a universally unmarked strategy both in terms of synchronic processes and of diachronic developments. Consequently, both epenthesis and paragoge are the marked case. This would seem to be *prima facie* contradicted by the evidence from English pidgins and creoles. Plag and Uffmann (2000, p. 326) claim that in language contact there occurs a markedness reversal. According to them, while "in regular language development epenthesis is marked and deletion unmarked, in language contact epenthesis is unmarked and deletion is marked" (Plag and Uffmann 2000, p. 326). The markedness reversal suggested would therefore account for the fact that in language contact, languages with more rigid syllable constraints resort to epenthesis and, especially, to paragoge rather than consonant deletion (cf. section **6.8**). However, this appears to be too much of an *ad hoc* explanation. In an optimality-theoretic account, the need to posit a markedness reversal does not even arise. On this analysis, the prevalence of epenthesis and paragoge in language contact is due to the fact that MAX-IO crucially outranks DEP-IO (see also **6.10**). As for the site of the intrusive "vowel", it falls out from the various relevant subhierarchies. Thus, if LEFT-ANCHOR *also* dominates DEP-IO, then epenthesis obtains, while the ranking of MAX-IO above both DEP-IO *and* LEFT-ANCHOR leads to prothesis. Illicit codas are resolved through paragoge if MAX-IO is ranked higher than both DEP-IO *and* RIGHT-ANCHOR. The crucial rankings, then, are rather language-specific, i.e. parameterized (see e.g. **6.5.2**). Finally, Alber and Plag (1999), and Plag and Uffmann (2000, p. 326) write that deletion seems to be restricted to complex onsets or complex codas, but tends not to affect simple codas. This is, once again the picture that has emerged from the analysis of English pidgins and creoles as well.

6.3 The phonological status of the "intrusive" vowel

The lexical or non-lexical status of "intrusive" vowels has been discussed or at least implicitly suggested by a number of authors researching several English-based pidgins and creoles. The latter include Ghanaian Pidgin English and Nigerian Pidgin English, among the Atlantic varieties, and Tok Pisin, among the Pacific varieties.

Two preliminary remarks are in order here. First, the analysis[1] is illustrated exclusively by epenthetic vowels breaking up onset clusters in the etyma. However, the conclusions hold *mutatis mutandis* for epenthetic vowels in coda clusters and for paragogic vowels as well. Second, the discussion does not refer to any of the English-

[1] See also Avram (2003b).

lexicon contact languages where the lexical status of "intrusive" vowels is not questioned, e.g. the creoles of Surinam.

6.3.1 Previous analyses

6.3.1.1 Ghanaian Pidgin English

The occurrence of epenthetic vowels has been noted in Ghanaian Pidgin English. Huber (1999b, p. 174) claims that these "[i]ntrusive vowels do not affect syllabification" and assumes that "[t]he phonemic form of these words is monosyllabic". He adduces two arguments in support of his position. The first argument is of a phonetic nature. Thus, according to Huber (1999b, p. 174), "the intrusive vowel is considerably shorter than other vowels in the same word". The second argument is intra-speaker variation, since "the same word may be realized with or without an epenthetic [...] vowel by the same speaker" (Huber 1999b, p. 174). In his opinion, "vowel insertion is due to a variable rule which operates on a phonemic representation that does not contain these vowels" (Huber 1999b, p. 174).

6.3.1.2 Nigerian Pidgin English

The status of epenthetic vowels in Nigerian Pidgin English is also a matter of some dispute. Thus, Obilade (1976, p. 18) writes that e.g. "[i]n stick, as well as in spoil [...], an epenthetic vowel is introduced to break the cluster". He then concludes that "[w]e phonemicize these forms as /stik/, /spɔil/" (Obilade 1976, p. 18), without however adducing any arguments in support of his analysis.

On the other hand, Barbag-Stoll (1983) also mentions and illustrates the occurrence of epenthetic vowels in the variety of Nigerian Pidgin English spoken by the Yoruba. Although Barbag-Stoll (1983) does not explicitly address the issue of the status of these epenthetic vowels, her transcriptions, between slashes, suggest that in her view the epenthetic vowel is part of the underlying representation of the respective lexical items. Finally, Elugbe and Omamor (1991, p. 82) state that "[i]n some varieties, [...] initial clusters are broken up by the insertion of a vowel between the consonants". On their analysis, the epenthetic vowel is not part of the lexical entry, but is rather inserted at the phonetic level, as in the example below:

(3) /klia/ [kilia] (E *clear*) 'clear' (Elugbe and Omamor 1991, p. 82)

6.3.1.3 Tok Pisin

Vowel epenthesis is well attested in Tok Pisin. As for the status of epenthetic vowels in Tok Pisin, Mihalic (1957, p. xviii), for instance, writes that "[t]his extra vowel is not phonemically significant, since its presence or absence makes no difference to the meaning of the word involved". In other words, the epenthetic vowel is not part of the lexical entry of the respective word.

6.3.2 Lexical or phonetic?

The question, then, is: are "intrusive" vowels lexical or rather inserted at the phonetic level? In other words, is the underlying representation of e.g. Nigerian Pidgin English [filag] 'flag' /filag/, i.e. with the epenthetic vowel, or rather /flag/, i.e. without it? The central claim of this section is that "intrusive" vowels are lexical.

Diachronically, e.g. Nigerian Pidgin English [filag] is no doubt derived from the English etymon /flæg/. I assume hereinafter the structural constraint *COMPLONS, with the following condition attached to it:

(4) *COMPLONS: complex onsets other than those made up of an obstruent and a glide are disallowed

Translated in optimality-theoretic terms, this points to the following constraint hierarchy:

(5) *COMPLONS, MAX-IO, ANCHOR-L >> DEP-IO, CONTIGUITY

The evaluation in the tableau below shows the interaction of these constraints:

(6)

/flæg/	*COMPLONS	MAX-IO	ANCHOR-L	DEP-IO	CONTIG
☞ fi.lag				*	*
flag	*!				

In a nutshell, the whole issue essentially centers on which of the following competing underlying representations should be posited for e.g. Nigerian Pidgin English [filag]. I assume the so-called richness of the input, i.e. that no constraints hold at the level of underlying forms (Kager 1999, p. 19). Accordingly, constraints interact exclusively at the level of the output. One consequence of this assumption is that the underlying representation is irrelevant. The interaction of the constraints in (5) will still secure the selection of [fi.lag] as the optimal output form, regardless of whether we posit /flag/ or /filag/ as the underlying representation. This is shown by the evaluations in tableaux (7) and (8):

(7)

/flag/	*COMPLONS	MAX-IO	ANCHOR-L	DEP-IO	CONTIG
☞ fi.lag				*	*
flag	*!				

(8)

/filag/	*COMPLONS	MAX-IO	ANCHOR-L	DEP-IO	CONTIG
☞ fi.lag				*	*
flag	*!				

To solve the problem of indeterminacy, I further assume lexicon optimization. This principle may be roughly formulated as follows: in the absence of empirical evidence for one input over another, select the input closest to the output. This amounts to selecting either the input that results in the fewest constraint violations or the input which violates the fewest high-ranking constraints (see Kager 1999, p. 33). This is illustrated by the "tableau des tableaux" below:

(9)

Input	Output	*COMPLONS	MAX-IO	ANCHOR-L	DEP-IO	CONTIG
☞ filag	fi.lag					
flag	fi.lag	*!				

As can be seen, /filag/ is the optimal input for the Nigerian Pidgin English output [filag]. It is the most faithful to the optimal output form [fi.lag], since it does not violate any constraint in the relevant hierarchy. On the other hand, the competing input /flag/ violates the highest ranking constraint.

The above result accords well, *mutatis mutandis*, with a claim put forth by Jacobs (1999). According to Jacobs (1999), given lexicon optimization, loanwords that are adapted to the native language phonology eventually have their input altered. That is to say, in our example, the original (English) input e.g. /flæg/ becomes /filag/ in Nigerian Pidgin English. On this analysis then, epenthetic vowels are part of the lexical entries.

An objection that could be raised against the analysis in this subsection is that it is based on strictly theory-internal arguments. Therefore, in what follows, I adduce empirical evidence in support of the analysis outlined.

6.3.3 Empirical evidence

6.3.3.1 Tone assignment in West African Pidgin English

Carter (1987) is an investigation of tone assignment in a number of English-based pidgins and creoles. With respect to West African Pidgin English, Carter (1987, p. 251) first notes that HH, i.e. high-high, "is the major class for English disyllabics with final stress"and for some French and Portuguese-derived disyllabics:

(10) dí'váyt (E *divide*) 'divide' (Carter 1987, p. 251)
má'dám (F *madame*) 'important woman' (Carter 1987, p. 251)
pí'kín (P *pequeno*) 'child?(Carter 1987, p. 251)

According to Carter (1987, p. 251) the HH class also includes "[m]onosyllabics with initial cluster resolved by anaptyxis":

(11) sípoyl (E *spoil*) 'spoil' (Carter 1987, p. 251)
sítík (E *stick*) 'stick' (Carter 1987, p. 251)

Note that as a consequence of epenthesis, the new disyllabics also have stress on the last syllable, which brings them in line with reflexes of disyllabic etyma. As far as tone assignment is concerned, disyllabic reflexes of monosyllabic etyma are treated synchronically just like reflexes of disyllabic etyma. In the latter, both vowels are undoubtedly lexical. It follows that the epenthetic vowel in disyllabic reflexes of monosyllabic etyma is also part of the lexical entry.

6.3.3.2 Tone assignment in Ghanaian Pidgin English

Huber (1999b, p. 174) briefly discusses the interaction of vowel epenthesis and tone assignment in Ghanaian Pidgin English. According to Huber (1999b, p. 174), in Ghanaian Pidgin English "[i]n epenthesis the tone-bearing vowel of the syllable containing the cluster is copied and inserted between two consonants". Consider some of his examples:

(12) [turu] (E *true*) 'true' (Huber 1999b, p. 174)
[sikin] (E *skin*) 'skin; body' (Huber 1999b, p. 174)

These lexical items are assigned to the HH tone pattern (not marked graphically in Huber 1999b). However, HH is also the tone pattern of disyllabic loanwords with final stress:

(13) *polis* (E *police*) 'police' (Huber 1999b, p. 280)

In such words, the first vowel is obviously lexical. Lexical items with a diachronically epenthetic vowel thus pattern with those without such a vowel. Therefore, on this analysis, the epenthetic vowel in the former set of words is also lexical. Note, finally, that the treatment of illicit onset clusters in basilectal Ghanaian Pidgin English brings it, not so surprisingly, in line with Akan, the major substrate language. In the latter, loanwords containing such clusters "end up as disyllables" (Carter 1987, p. 233).

6.3.3.3 Phonetic reduplication in Tok Pisin

Verhaar (1995, p. 8) identifies in Tok Pisin a type of reduplication which he calls phonetic. Phonetic reduplication forms are derived from bases which are not attested as independent words. One such form is:

(14) [supsup] 'arrow, (fish-) spear' (Laycock 1985, p. 303)

This presupposes that the base is the non-existent word */sup/. According to Laycock (1985, p. 303) the base /sup/ obtains from [súpia] (E *spear*), with a stressed epenthetic vowel. Since the base is /sup/, then the epenthetic vowel in [supia] is lexical. The underlying representation of [supia] is therefore /supia/.

6.3.3.4 Morphological reduplication in Bislama

According to Crowley (1990, p. 310), two types of morphological reduplication are attested in Bislama. One is CV reduplication, in which the first consonant and the first vowel of the base is reduplicated:

(15) *simol* 'little' (E small) *sisimol* 'little'(Crowley 1990, p. 310)

As can be seen, the reduplicant is a monomoraic syllable, i.e. Red= σ_{μ}. Two constraints need to be added: Anchor-BR and Max-BR. They are defined, following Kager (1999, pp. 205 and 213), in (16) and (17) respectively:

(16) Anchor-BR: the left peripheral element of the reduplicant corresponds to the left peripheral element of the base

(17) Max-BR: no partial reduplication

In CV reduplication the constraint hierarchy is:

(18) Anchor-BR, Red=σ_{μ}, Max-IO >> NoCoda, Max-BR

The ranking is illustrated by the evaluation in the tableau below:

(19)

/Red-simol/	Anchor-Br	Red= σ_{μ}	Max-IO	NoCoda	Max-BR
☞ si.si.mol				*	***
si.mol.si.mol		*!		**	
sim.si.mol		*!		**	**
si.si.mo			*!		***
i.si.mol	*!			*	****
si.si			*		***

The second type of morphological reduplication in Bislama is (C)VC reduplication. Consider the following example:

(20) *simol* 'little' (E small) *simsimol* 'little' (Crowley 1990, p.310)

In this type of reduplication, the reduplicant is a bimoraic syllable, i.e. Red= $\sigma_{\mu\mu}$. (C)VC reduplication is captured by the following constraint hierarchy:

(21) Anchor-BR, Red=$\sigma_{\mu\mu}$, Max-IO>>NoCoda, Max-BR

The ranking suggested is supported by the evaluation in the following tableau:

(22)

/RED-simol/	ANCHOR-BR	RED= σ_{uu}	MAX-IO	NOCODA	MAX-BR
☞ sim.si.mol				**	**
si.mol.si.mol		*!		**	
si.si.mo		*!			***
sim.si.mo			*!	*	**
im.si.mol	*!			**	***
si.si			*		***

In both types of morphological reduplication the base is /simol/, i.e. the epenthetic vowel in the Bislama reflex of English *small* is part of the lexical entry.

6.3.3.5 Fossilized forms in Tok Pisin

As noted by Pawley (1975, p. 226), in Tok Pisin "for some speakers vowels which are historically epenthetic are now present in underlying forms". Building on Pawley's observation, I have conducted a sociolinguistic analysis of all the samples and texts in the latest and most comprehensive account of Tok Pisin by Smith (2002). The examples in table (23) below are epenthesized Tok Pisin reflexes of English etyma, recorded in at least two provinces of Papua-New Guinea, containing the following onset clusters: /pl/, /br/, /fr/, /sl/ /sn/, /tr/ and /kr/. The data set out in table (23) show that such fossilized forms, with a lexicalized epenthetic vowel, have a wide distribution. Most of them are attested in more than two provinces, in the speech of several of Smith's subjects, irrespective of the sex of the speakers. Note that the number of female subjects seems to have been disproportionately low among Smith's speakers. Since all Smith's informants are teenagers, the age is irrelevant to the outcome and is not indicated. Finally, the occurrence of forms with lexicalized epenthetic vowels even with young speakers attests to the stability of the diachronically epenthetic vowels.

(23)

Form, etymon and gloss	**Number of attestations**	**Number of provinces**	**Number of speakers**	**Sex**	
				Male	**Female**
peles (E *place*) 'place'	24	6	17	8	9
pilai (E *play*) 'to play'	8	5	7	3	4
barata (E *brother*) 'brother'	4	2	3	2	1
buruk (E *broke*) 'to break'	3	3	3	3	0
poret (E *afraid*) 'afraid'	9	4	7	2	5
silip (E *sleep*) 'to sleep'	18	9	16	9	8
sinek (E *snake*) 'snake'	5	3	4	3	1
turu (E *true*) 'true'	2	2	2	2	0
karai (E *cry*) 'to cry'	5	3	4	4	0
koros(im) (E *cross*) 'to be angry'	10	4	2	2	8

6.3.3.6 Stress shift in Tok Pisin

In earlier stages of Tok Pisin, the epenthetic vowel, whatever its exact phonetic realization, seems to have been unstressed, according to the descriptions available. Thus, Hall (1943, pp. 156) states that "these clusters are pronounced by [Melanesian speakers] as consonant + unaccented vowel + consonant". In his turn, Murphy (1966, p. 3) writes that "[w]hen the consonants appear in these pairs [...] TR, BL, BR, Pl, PR, KL, KR, KW, they are pronounced as if an unaccented "i" were between each pair of consonants".

As for contemporary Tok Pisin, Mihalic (1957, p. xviii) claims that whereas "the word pilai 'to play' [...] always has its stress on the first syllable" otherwise "the epenthetic vowel is *not accented* [emphasis added]". This claim is clearly invalidated by examples such as the following:

(24) [síkiřap] (E *scrape*) 'scrape' (Pawley 1975, p. 220)
[bílo:] (E *blow*) 'to blow' (Pawley 1975, p. 228)
túru (E *true*) 'true' (Laycock 1985, p. 303)

The forms listed above lend support to Laycock's (1985, p. 303) suggestion that "words in which an originally epenthetic vowel has become stressed, to conform with the [...] rule of initial-syllable stress in Tok Pisin, can be taken as having the "epenthetic" vowel present in the underlying representation".

6.3.3.7 Anglicized variants in Ghanaian Pidgin English

Forms such as [ples] (E *place*) are Anglicized variants. Even speakers of the basilectal variety of Ghanaian Pidgin English, are exposed to (some) English. They are therefore aware of the "intrusive" nature of epenthetic vowels and delete them in the Anglicized variety of the pidgin (Avram 2003a, p. 389). The epenthetic vowel, then, is lexical rather than inserted at the phonetic level (*contra* Huber 1999b, p. 174). In other words, the underlying representations of Ghanaian Pidgin English reflexes of e.g. E *place* are /pe.les/, in the basilectal variety, and /ples/ in the Anglicized one respectively. Anglicized variants, then, are the result of reranking of constraints:

(25) initial ranking: *COMPLONS, MAX-IO, ANCHOR-L >> DEP-IO, CONTIGUITY
reranking: MAX-IO, DEP-IO, CONTIGUITY, ANCHOR-L >> *COMPLONS

Adapting van Oostendorp's (1997, p. 209) analysis of what he calls "style level", I propose the following statement of Anglicization:

(26) The more Anglicized the speech level, the higher ranked the faithfulness constraints

In Anglicized forms, such as e.g. [ples] 'place' the faithfulness constraint DEP-IO outranks the structural constraint *ONS/SO. The ranking DEP-IO >> *ONS/SO is thus a sociolinguistic marker in Tok Pisin, in the sense of Holm (2000, p. 148). The evaluations in tableaux (27) and (28) illustrate the effects of the initial ranking and of the reranking of constraints in Anglicized forms respectively:

(27)

/pleis/	*COMPLONS	MAX-IO	ANCHOR-L	DEP-IO	CONTIG
☞ pe.les				*	*
ples	*!				

(28)

/pleis/	MAX-IO	DEP-IO	CONTIG	ANCHOR-L	*COMPLONS
pe.les		*!	*		
☞ ples					*

6.3.3.8 Anglicized variants in Tok Pisin

An argument similar to that outlined in **6.3.3.7** is put forth by Goulden (1990) with respect to Tok Pisin. Thus, Goulden (1990, p. 54) notes the "increased influence of standardization in Tok Pisin, which itself often has an English bias, e.g. [...] the loss of epenthetic vowels". In other words, in items with an originally lexicalized epenthetic vowel, the respective vowel is deleted in the Anglicized variety. Here again, Anglicized variants, such as e.g. *klin* (E *clean*) 'to clean' can be accounted for by reranking of constraints:

(29) initial ranking: *COMPLONS, MAX-IO, ANCHOR-L >> DEP-IO, CONTIGUITY
reranking: MAX-IO, DEP-IO, CONTIGUITY, ANCHOR-L >> *COMPLONS

The initial constraint hierarchy yields e.g. Tok Pisin forms such as in *kilin*, whereas their Anglicized counterparts, e.g. *klin*, obtain from reranking[2].

6.3.3.9 Inter-generational variation in Tok Pisin

According to Goulden (1990, p. 49), in Tok Pisin "[t]here is now a trend among younger people towards re-establishing the English forms" which "currently [...] distinguishes between younger and older generations". This accounts for the occurrence of non-epenthesized onset clusters and suggests the following difference in the underlying representations of reflexes of etyma with such clusters:

(30) older speakers: epenthetic vowels are part of underlying representations
younger speakers: underlying representations without epenthetic vowels

In optimality-theoretic terms, (30) amounts to saying that the difference between older

[2] For their evaluations, cf. those in (27) and (28) respectively.

speakers of Tok Pisin and younger ones obtains from reranking of constraints[3]:

(31) initial ranking (older speakers):
*COMPLONS, MAX-IO, ANCHOR-L >> DEP-IO, CONTIGUITY

reranking (younger speakers):
MAX-IO, DEP-IO, CONTIGUITY, ANCHOR-L >> *COMPLONS

6.3.3.10 Intra-speaker variation in Tok Pisin

The inter-generational distinction with respect to speakers of Tok Pisin suggested in **6.3.3.9** is, in fact, not so neat. There is some intra-speaker variation, illustrated by alternations in the speech of some of Smith's (2002) subjects:

(32) *silip* ~ *slip* (E *sleep*) 'to sleep'

The coexistence of Anglicized forms and basilectal ones can be accounted for by assuming multiple storage of underlying representations in the sense of Jacobs (1999). Accordingly, basilectal underlying representations do include the epenthetic vowel, e.g. /si.lip/, whereas lexical entries of Anglicized forms do not, e.g. /slip/.

6.3.3.11 Speech tempo in Tok Pisin

The last piece of empirical evidence considered is presented in table (33) below based on data from Pawley (1975, p. 220):

(33)

Citation (very slow)	**Citation (careful)**	**Casual (context)**	**Fast (context)**	**English gloss**
[péles]	[péles]	[pelés]	[ples]	'place'
[bə́řʌtʌ]	[bəřʌ́tʌ]	[bəřʌ́tʌ]	[bəřʌtʌ]	'brother'
[bířis]	[biřís]	[břis], [biřís]	[břis]	'bridge'
[kə́lʌb]	[kəlʌ́b]	[klʌb]	[klʌb]	'club'
[kíla^{o}t]	[kilá^{o}t]	[kla^{o}t], [kilá^{o}t]	[kla^{o}t]	'cloud'
[kílin]	[kilín]	[kilín]	[klin]	'clean'
[kílok]	[kilók]	[kilók]	[klok]	'clock'
[kúřukutim]	[kúřukutim]	not attested	[křúkutim]	'to bend'
[súkuřu:], [síkuřu:]	[súkuřu:]	[skřu:], [sukřú:]	[skřu:]	'screw'
[giřá^{o}n]	[gřa^{o}n]	[gřa^{o}n]	[gřa^{o}n]	'ground'

It is precisely the presumably most careful speech style, "citation (very slow)", that evinces, without exception, epenthetic vowels. Note that with the sole exception of the reflex of E *ground*, in all forms in the column labeled "citation (very slow)" stress is shifted onto the epenthetic vowel (the first one, if there are more epenthetic vowels, as in the reflex of E *screw*). In addition, stress shift onto the epenthetic vowels survives, to some extent, in the "citation (careful)" register. As can be seen, in 3 forms

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[3] The evaluations of relevant forms would look like those in (27) and (28) respectively.

out of 11 stress still falls on the epenthetic vowel. To sum up, in "citation (very slow)" epenthetic vowels occurs in all 11 forms, 10 of which also carry stress, whereas no such instances are recorded in the register "fast (context)". This is then strong evidence in favour of positing lexical entries including the epenthetic vowel, which is deleted in fast speech.

6.4 The role of the substrate languages

In this section I show that the relation between the phonologies of the substrate languages and that of the English pidgins and creoles is less straightforward than assumed in much of the literature (e.g. Boretzky 1983, Wise 1990, Singler 1996a and 1996b).

6.4.1 Paragoge in Gbe, Kikongo, Yoruba, Akan, and Sranan

The major substrate languages of Sranan are, by all accounts (Smith 1987, Arends 1995, Parkvall 2000, Plag and Uffmann 2000, Migge 2003), Gbe and Kikongo. In addition, Smith (1987, p. 347) mentions Yoruba (but not Akan), while Plag and Uffmann (2000, p. 328) lists Akan (but not Yoruba). It is instructive, then, to compare paragoge in the substrate languages and in Sranan.

Consider first paragoge in Gbe. Plag and Uffmann (2000, p. 329) list three types of paragoge: with default [i] or [e] in (34), rounding vowel harmony in (35) and labial attraction in (36):

(34) *laglasi* (F *la glace*) 'ice cream' (Plag and Uffmann 2000, p. 329)
bele (E *bed*) 'bed' (Plag and Uffmann 2000, p. 329)
(35) *bolu* (E *ball*) 'ball' (Plag and Uffmann 2000, p. 329)
(36) *glevu* (F *grève*) 'strike' (Plag and Uffmann 2000, p. 329)

Consider next Kikongo. According to Plag and Uffmann (2000, pp. 328–329), the paragogic vowel is either [i] or [a][4] or a copy of the vowel to the left:

(37) 1887 *palasola* (P *parasol*) 'umbrella' (Plag and Uffmann 2000, p. 329)
(38) 1887 *ebuku* (E *book*) 'book' (Plag and Uffmann 2000, p. 329)

Yoruba does not allow any consonant clusters either (Carter 1987, Smith 1987, p. 347, Pulleyblank 1988, Weinberger 1997, p. 292). According to Weinberger (1997, p. 292), "the most frequent syllable simplification strategy is vowel epenthesis"[5]. He further claims, however, that "the vowel used to repair the borrowed words' syllable structure is /i/" (Weinberger 1997, p. 292). In fact, /i/, the functionally

[4] Plag and Uffmann (2000) provide no examples with [i], even though they mention "a preponderence of paragogic /-i/". The occurrence of [a] is unexpected (see Kager 1999, p. 124).
[5] Weinberger (1997) uses "epenthesis" as a cover term for both epenthesis and paragoge.

asymmetric (underspecified) vowel of Yoruba (Pulleyblank 1988)[6], is just the default "intrusive" vowel, both as an epenthetic vowel and as a paragogic vowel:

(39) *bíríkì* (E *brick*) 'brick' (Weinberger 1997, p. 292)
(40) *sílípáàsì* (E *slippers*) 'slippers' (Weinberger 1997, p. 292)

Carter (1987, p. 238) writes that Yoruba, etymological "[f]inal consonants are either omitted [...] or, more often, followed by –V", but fails to account for the selection of the paragogic vowel. As shown below, beside default [i], paragoge occurs with vowel copying in (41), with rounding vowel harmony (42), and with labial attraction (43):

(41) /sukuru/ (E *school*) 'school' (Barbag-Stoll 1983, p. 71)
(42) *góolu* (E *gold*) 'gold' (Carter 1987, p. 238)
(43) *fiimu* (E *film*) 'film' (Carter 1987, p. 238)

Finally, consider paragoge in Akan (Twi) Plag and Uffmann (2000, pp. 329–330) only mention the default paragogic vowel [e] or [i][7] and "occasional vowel copying". In fact, as shown below, the occurrence of other paragogic vowels may be enforced via rounding vowel harmony in (44) or labial attraction (45):

(44) *cɔ́ɔku* (E *chalk*) 'chalk' (Carter 1987, p. 233)
(45) *bɔ́ɔsutapu* (E *bus stop*) 'bus stop' (Carter 1987, p. 232)

In conclusion, as put by Plag and Uffmann (2000, p. 330), "the [...] facts strongly speak for substratal transfer effects". Following Siegel (1997), they state that these "are best explained as the result of dialect mixing and leveling". Consider, however, the findings above and from **6.2.4.1** set out in table (46):

(46)

Language	**Type of paragoge; First attestations in Sranan**			
	Default	**Vowel copying**	**Rounding vowel harmony**	**Labial attraction**
Kikongo	[i], [a]	+	–	–
Gbe	[i], [e]	–	+	+
Yoruba	[i]	+	+	+
Akan	1. [e]; 2. [i]	+	+	+
Sranan	1. [e] 1718 2. [i] 1718	1745	1783	1781

As can be seen, [i] is the/a default vowel in all major substrate languages of Sranan. In addition, [e] is recorded in three of the substrate languages. This may account both for the occurrence of paragogic [i] and for the fact that default paragogic [a] is not found in Sranan. As for vowel copying, rounding vowel harmony and labial attraction, they are attested in three of the substrate languages. It would seem that paragoge in Sranan

[6] See also Roca (1994, p. 62–64).
[7] Plag and Uffmann (2000, p. 330) write that [e] is the default vowel "in the first sources" on Akan.

owes more to Yoruba and Akan than to Gbe and Kikongo. Indeed, while vowel copying is not attested in Gbe and rounding vowel harmony does not occur in Kikongo, both are found in Yoruba and Akan. Moreover, one might be tempted to speculate that the influence of Akan may have been the decisive factor in the emergence of paragoge with vowel copying, with rounding vowel harmony and with labial attraction. The occurrence of vowel copying in Yoruba only and of rounding vowel harmony and of labial attraction in both Gbe and Yoruba apparently did not reach "threshold" levels. As shown in table (46), all these types of paragoge are first recorded at a later stage in the history of Sranan, after ca. 1720, when "Twi speakers occurred in significant numbers" (Plag and Uffmann 2000, p. 328). A scenario assuming Mufwene's (1990a, 1990b, 1991, and 2000, pp. 56–57) notion of "weighted markedness" would readily account for that. However, such a scenario fails to explain the identical developments in Saramaccan (**5.2.4.2**), Ndyuka (**5.2.4.3**) and Aluku (**5.2.4.4**), all ultimately offshoots of early Sranan.

6.4.2 Epenthesis and paragoge in Akan and Ghanaian Pidgin English

According to Huber (1999b, p. 136), the main substrate language of Ghanaian Pidgin English is Akan (= Twi). The syllable structure of Akan does not permit onset clusters (see e.g. Carter 1987, pp. 232–233, and Clements 2000, p. 146). Here are some examples of how English and French loanwords containing illicit onset clusters are adjusted in Akan:

(47) *bírúu* (E *blue*) 'blue' (Carter 1987, p. 232)
faransiɛ́ (F *français*) 'French' (Carter 1987, p. 233)
tirìn (E *train*) 'train' (Carter 1987, p. 232)
sútɔ́ɔ (E *store*) 'store' (Carter 1987, p. 232)
sukúu (E *school*) 'school' (Carter 1987, p. 232)
girase (E *glass*) 'glass' (Plag and Uffmann 2000, p. 330)

Such examples show that Akan resorts to a variety of epenthetic vowels. One option is vowel copying, as in *faransiɛ́* (F *français*) 'French'. Another is vowel harmony, e.g. *sútɔ́ɔ* (E *store*) 'store'. Finally, there is also a default epenthetic vowel [i] as in *bírúu* (E *blue*) 'blue'. Note, in the last example, that [i] cannot have been selected because of the following [CORONAL] consonant /r/, i.e. it cannot be a case of transcategorial assimilation of the V-to-C type, since /r/ in *faransiɛ́*, and respectively /t/ in *sútɔ́ɔ* are also [CORONAL]. Moreover, in *sútɔ́ɔ*, the epenthetic vowel is not [CORONAL], even though both the preceding consonant, i.e. /s/, and the following one, /t/, are [CORONAL]. Let me turn next to two apparently ambiguous instances. Consider first *sukúu* (E *school*) 'school' which may illustrate vowel copying. However, it may also exemplify vowel harmony where the relevant feature of the vowel is [LABIAL], since the epenthetic [u] also occurs in *sútɔ́ɔ* (E *store*) 'store'. Next, there is *tirìn* (E *train*) 'train' which again appears to be an instance of vowel copying.

A more plausible interpretation would be to take [i] as being rather an instantiation of the default intrusive vowel. A number of arguments lend support to this analysis. First, [i] has been shown to be clearly the default epenthetic vowel in forms such as *bírúu* (E *blue*) 'blue'. Second, [i] is selected to permit the syllabification of word-internal consonants that would otherwise constitute illicit codas, even if the preceding vowel is [LABIAL]. The latter may enforce the selection of epenthetic [u]. Compare examples (48) and (49) below:

(48) *dɔ́kita* (E *doctor*) 'doctor' (Carter 1987, p. 232)
(49) *pɔ́suɔfisi* (E *post office*) 'post office' (Carter 1987, p. 232)

Third, as already shown in **6.2.1**, [i] is also the default paragogic vowel. The effects of vowel copying, vowel harmony and labial attraction have been illustrated in **6.2.1**.

If my analysis is correct, basilectal and jargonized Ghanaian Pidgin English have developed their own generalized norms for the selection of the intrusive vowel, and therefore differ from of Akan, the major substrate language. To break up onset clusters via epenthesis, basilectal Ghanaian Pidgin English resorts exclusively to vowel copying (section **4.3.1**), and the jargonized variety (**4.3.1**) exclusively to the default epenthetic vowel [i]. Neither resorts to the third available option occurring in Akan, namely vowel harmony. As for paragoge, both varieties select a default vowel exclusively, [ɛ] in basilectal Ghanaian Pidgin English (section **5.3.1.1**), and [i] in the jargonized variety (**5.3.1.2**). Again, both varieties of Ghanaian Pidgin English have each selected just one of the options attested in Akan, which they apply across the board. Finally, note that with respect to both epenthesis and paragoge the two varieties of Ghanaian Pidgin English are "simpler" than Akan, the major substrate language.

6.4.3 Onsets and codas in Yoruba and Yoruba Nigerian Pidgin English

Consider the following examples of loanwords in Yoruba:

(50) *súkúulu* 'school' (Carter 1987, p. 239)
/sukuru/ 'school' (Barbag-Stoll 1983, p. 71)
búlúu (E *blue*) 'blue' (Carter 1987, p. 238)
borokeedi (E *brocade*) 'brocade' (Carter 1987, p. 238)
búréeki (E *brake*) 'brake' (Carter 1987, p. 239)

tɔrɔ́sa (E *trousers*) 'trousers' (Carter 1987, p. 238)
gɛ́ɛɛsi (P *inglês*) 'English' (Carter 1987, p. 238)

Clearly, [i] is not the only epenthetic vowel in Yoruba (*contra* Weinberger 1997, p. 292). Yoruba also resorts to epenthesis with vowel copying, as exemplified by five of the seven forms above. In addition, even *gɛ́ɛɛsi* (P *inglês*) 'English' might not be a case of cluster simplification via liquid deletion, as it appears at first sight, but of epenthesis with vowel copying. Given that it is borrowed from Portuguese, it is certainly an old loanword. Its present-day form may well be the result of the following sequence of events:

(51) P *inglês* > **gɛ́lɛɛsi* > *gɛ́ɛɛsi*

As for *búréeki* 'brake', this illustrates transcategorial progressive assimilation of the C-to- type: the [LABIAL] consonant /b/ enforces the selection of the [LABIAL] vowel [u] as an epenthetic vowel. The vowel [u] also permits the syllabification of word-internal consonants that would otherwise constitute illicit codas, if the preceding vowel is [LABIAL]:

(52) *ɛlikópúta* (E *helicopter*) 'helicopter' (Carter 1987, p. 238)

Of these three options, just one, i.e. the selection of the default epenthetic vowel [i], is also attested in Yoruba Nigerian Pidgin English (section **4.3.2**). In conclusion, while Yoruba Nigerian Pidgin English and Yoruba both resort to vowel epenthesis for the resolution of illicit clusters, the former appears to have developed independently of the latter norms for the selection of the epenthetic vowel. Note that the pidgin is also "simpler" in this respect than its substrate language.

Consider next codas. Paragoge in Yoruba, as in Yoruba Nigerian Pidgin English, is of four types: with the default vowel [i], with vowel copying, with vowel harmony or with labial attraction (see **6.4.1**). However, Yoruba applies paragoge to codas across the board. Coda clusters are simplified by deletion of one of the consonants plus addition of the paragogic vowel, as in *góolu* (E *gold*) 'gold'. All simple codas in the etyma, including [+nasal] ones, as in *kɔ́ɔmu* (E *comb*) 'comb', are followed by a paragogic vowel. As for Yoruba Nigerian Pidgin English, it differs from Yoruba in several respects. It allows both [-nasal] and [+nasal] codas in reflexes of complex codas, it breaks /lp/ and /lk/ codas by epenthesizing a copy of the vowel to their left, it permits [+nasal] codas, and it restricts paragoge to etymological [-nasal] simple codas (**5.3.2.2**). Yoruba Nigerian Pidgin English is yet another example of a variety of restructured English that has developed adjustment norms independently of those of its substrate language. Interestingly, and rather unexpectedly, the pidgin has less tight constraints on codas than its substrate language.

6.4.4 Obstruent + liquid onset clusters in Tolai and Tok Pisin

The Pacific English pidgins and creoles emerged in multilingual settings involving a variety of Melanesian, Austronesian, Papuan and Australian Aboriginal substrate languages. As noted e.g. by Goulden (1990, p. 49) "many MNAN [= Melanesian and Austronesian] languages have little tolerance for consonant clusters". In his turn, Lynch (1998, p. 83) states that "[s]ome Oceanic languages allow only *open* syllables" and therefore "[t]hese languages do not permit *consonant clusters*". Lynch (1998, p. 83) further writes that "the general structure of words in languages of this type is built on the pattern (C)V(C)V". Lynch (1998, p. 83) mentions the fact that such "[l]anguages that allow only open syllables occur in some parts of Papua New Guinea and Vanuatu, the southeastern Solomon". These are precisely the areas where e.g. Tok Pisin, Bislama and Solomon Islands Pidgin have emerged. Their syllable structure would be expected to reflect the influence of substrate languages.

Consider, however, the fate of obstruent + liquid onset clusters in the Melanesian language Tolai, since it has been frequently mentioned as allegedly being the major substrate language of Tok Pisin. According to Mosel (1980, p. 18): "Tolai allows [no] consonant clusters in word-initial [...] position". Here are some of her examples involving reflexes of etyma with obstruent + liquid onset clusters:

(53) *pelet* (E *plate*) 'plate' (Mosel 1980, p. 18)
tarautete (E *trousers*) 'trousers' (Mosel 1980, p. 18)
galat (E *glass*) 'glass' (Mosel 1980, p. 18)

As can be seen, the clusters at issue appear are subject to epenthesis with vowel copying, a fact incidentally not mentioned by Mosel (1980).

According to Mosel (1980, p. 18) "[c]onsonant clusters in English [...] loanwords are even more consequently reduced than in (present-day) Tok Pisin". She further writes that Tok Pisin forms with onset clusters "have certainly developed from earlier forms which showed a syllable structure similar to that of Tolai" (Mosel 1980, p. 19). Still, Mosel (1980, p. 19) cautions us that "the fact that both in Tok Pisin and Tolai consonant clusters are reduced is not sufficient to prove direct substratum influence from Tolai, since this [...] is a common Melanesian feature". A strong argument lending support to this conclusion, but not noticed by Mosel, resides in the fact that Tolai and Tok Pisin differ in the choice of the epenthetic vowel. While the former opts across the board for vowel copying, the latter (see **4.5.1**) also resorts to the default epenthetic vowel [i]. It would seem then that Tok Pisin may have developed its own norms for selecting the epenthetic vowel independently, at least in part, from those of Tolai, its main substrate language.

6.5 Syllable restructuring in Atlantic Dutch and French creoles

In this section I briefly compare syllable restructuring in English pidgins and creoles and in Atlantic Dutch creoles and French creoles. Such a comparison is of some interest for at least two reasons. First, the Dutch- and French-based creoles share, roughly speaking, the substrate languages with their English counterparts (Mufwene 1996, p. 15, Parkvall 1999, pp. 54–56, and 2000, p. 53, Plag and Uffmann 2000, p. 310). This would predict similar outcomes in all these restructured varieties. Second, the similarities in terms of phonetic realizations of relevant segments and of syllable structure between Dutch and English and the differences between French and English would predict a closer match between creoles lexified by English and Dutch respectively than between those lexified by French and English respectively. The data from Negerhollands are from Stolz (1986), Sabino (1993), van Rossem and van der Voort (1996), and den Besten and van der Voort (1999). The discussion of French creoles is based on Parkvall (1999 and 2000), and Avram (2000a, 2002 and in press a).

Listed below are illustrations of the various strategies used in Negerhollands to resolve illicit onsets:

(54) Deletion of /s/ in reflexes of /s/ + obstruent clusters
1883 *kriff* (D *schrijven*) 'to write' (van Rossem and van der Voort 1996, p. 238)
tan (D *stand*) 'to stand' (Stolz 1986, p. 95)

(55) Epenthesis of [COR] /i/ in reflexes of /s/ + [COR] nasal
šini (dial. D *snie(j)en*) 'to cut' (Sabino 1993, p. 42)

(56) Epenthesis with default vowel in reflexes of other obstruent + liquid clusters:
filis (dial. D *vleis*) 'meat' (Sabino 1993, p. 41)

The strategies for the resolution of illegal codas are illustrated below:

(57) Deletion of [COR] segment in reflexes of consonant + [COR] clusters:
1883 *tand* (D *tand*) 'tooth' (van Rossem and van der Voort 1996, p. 239)

(58) Epenthesis in reflexes of stop + fricative clusters:
1883 *jamus* (E *yams*) 'yam' (van Rossem and van der Voort 1996, p. 243)

(59) Paragoge with default vowel ([i] or [e]):
1753 *muschie* (E *much*) 'many' (van Rossem and van der Voort 1996, p. 83)
early 1770s *hemete* (D *hemd*) 'shirt' (van Rossem and van der Voort 1996, p. 218)

(60) Paragoge with vowel copying:
1765 *hoppo* (D *op* 'up') 'to rise' (van Rossem and van der Voort 1996, p. 111)

(61) Paragoge with vowel harmony:
1883 *futto* (D *voet*) 'foot' (van Rossem and van der Voort 1996, p. 239)
(62) Paragoge with labial attraction
early 1770s *krabbo* (D *krab*) 'crab' (van Rossem and van der Voort 1996, p.211)

All the strategies, including the effects of V_{COR}-C_{COR} and C_{LAB}-V_{LAB} used to resolve illicit onsets or codas exemplified above are also attested in English pidgins and creoles. Note that paragoge with labial attraction, illustrated in (62), is not mentioned at all by either Stolz (1986) or Sabino (1993). Further evidence of (occasional) effects of C_{LAB}-V_{LAB} in Negerhollands is found in (58), where epenthetic [u] is selected by the [LABIAL] stop /m/, as well as in a form such as 1883 *posallem* (D *psalm*) 'hymn' (van Rossem and van der Voort 1996, p. 239), where epenthetic [o] is selected by the [LABIAL] stop /p/. In conclusion, in terms of syllable restructuring, Negerhollands and English pidgins and creoles are rather similar[8].

Most of the strategies of resolving illicit onsets and codas identified in restructured varieties of both English and Dutch are, as shown by Parkvall (1999, p. 33), conspicuously absent in Atlantic French creoles. One exception is the treatment of /s/ + obstruent onset clusters in several Atlantic French creoles (*contra* Parkvall 1999, p. 32). In Guadeloupean, Guyanais, Haitian, Marie-Galantois, Martinican, and Trinidadian French Creole, /s/ + obstruent onset clusters are simplified via prothesis of [ɛ] (and/or [i], depending on the variety):

(63) Guadeloupean *èstad* (F *stade*) 'stadium'
1869 Trinidadian French Creole *estimar* (E *steamer*) 'steamer'

Other /s/-initial onset clusters, such as /sl/ and /sw/ are preserved as such, which suggests sonority sequencing related effects.

Why do Atlantic French creoles resort to vowel prothesis, whereas their English counterparts, in which anaptyxis occurs, resort to epenthetic vowels? Previous accounts include the following. The influence of substrate languages has been mentioned for Guadeloupean in particular by Hazaël-Massieux (1993, p. 113), and for the ranking of constraints in any given creole by Singler (1996a, p. 158, and 1996b, p. 220). Such an explanation is ruled out, however, given the essentially identical substrate of both English and French Atlantic creoles. In his turn, Holm (1988, p. 110, and 2000, p. 142) points to a possible Portuguese influence on Guyanais, but this would anyway leave unaccounted for the occurrence of vocalic prothesis in other

[8] Cf. also den Besten and van der Voort (1999, pp. 391–392). See, however, Stolz (1986) on frequency differences and Sabino (1993) on some qualitative differences.

Atlantic French creoles. The identical treatment of French and English etyma, in (63), suggests that differences between the phonetic realizations of /s/ and of voiceless stops in French and English are not the answer either. The influence of (unspecified) dialects of French, as suggested by Parkvall (2000, p. 83, n. 74), cannot explain the presence of /s/ + obstruent onset clusters in some Atlantic French creoles (e.g. Louisianais, Dominican, St Lucian), in the absence of any detailed evidence on dialectal differences in the superstratal input. Finally, the tendency in *français populaire* to add a prothetic vowel, mentioned by Jourdain (1956, p. 21)[9], cannot explain why this tendency has not manifested itself in those Atlantic French creoles which do permit /s/ + obstruent onset clusters.

I would like to claim that the issue should be adressed from a different perspective. Deletion of /s/ and epenthesis in /s/ + obstruent onset clusters increase the number of CV syllables. This is, then, an illustration of a universal tendency in syllable types. CV syllables are the unmarked type and prevail in the Atlantic creoles, as pointed out by Holm (1988, p. 110, and 2000, p. 142) and Parkvall (1999, p. and 2000, pp. 52–54). This falls out naturally from the crucial constraint subhierarchies in the Atlantic English pidgin and creoles: DEP-IO >> MAX-IO, LEFT-ANCHOR or MAX-IO, LEFT-ANCHOR >> DEP-IO respectively. Prothetic vowels necessarily yield VC syllables, thus running counter to the prevailing syllable type. However, according to Hock (1991, p. 126), there is a universal tendency regarding the site of the anaptyctic vowel in the environment /s/ + obstruent: "[o]f the different possible approaches [...], the most popular seems to be [...] **prothesis**". Hock (1991, p. 126) further states that "[a]naptyxis into the [s + stop] cluster [...] is less commonly employed". In onset position then, /s/ + stop clusters are more frequently broken up by anaptyxis *in front of* rather than *into* the cluster, i.e. prothetic vowels appear to be cross-linguistically more common than epenthetic ones. This is precisely the tendency illustrated by the Atlantic French creoles at issue. The relevant subhierarchy is: MAX-IO >> DEP-IO, LEFT-ANCHOR. On this analysis then, the resolution of illicit /s/ + obstruent onset clusters both in English and in French Atlantic creoles implements universal tendencies, via a different ranking of constraints.

Consider also the fate of obstruent + liquid clusters. They are preserved in several English Atlantic pidgins and creoles, including in earlier stages of the creoles

[9] The same author identifies it with a tendency in Old French (Jourdain 1956, p. 291)!

of Surinam in the onset (see **4**). In the Atlantic French creoles too such clusters are preserved in the *onset.* In this syllabic position, they obey SON-SEQ, are consequently less marked and more easily learnable. However, in *coda* position, reflexes of obstruent + liquid clusters are reduced via liquid deletion[10] (Valdman 1978, p. 57, Tinelli 1981, p. 170)

(64) *tab* (F *table*) 'table' (Tinelli 1981, p. 170)
(65) *sik* (F *sucre*) 'sugar' (Valdman 1978, p. 57)

Obviously, coda obstruent + liquid clusters violate SON-SEQ, are therefore marked and consequently less likely to be preserved.

On a more general level, this brief comparison of Dutch, French and English creoles has shown, as in section **6.4**, that syllable restructuring in pidgins and creoles cannot always be traced back to substrate languages (*contra* Singler 1996a, p. 158, and 1996b, p. 220).

6.6 Acquisition of first language phonology

The literature on first language acquisition consulted includes Locke (1983), Stoel-Gammon and Dunn (1985), Ingram (1979), Fee (1995), Gnanadesikan (1995, 1996), Bernhardt and Stemberger (1997), Vihman (1996), de Boysson-Bardies (1999), O'Grady and Archibald (2000), Grijzenhout (2000), Grijzenhout and Joppen (2000), Young-Scholten and Archibald (2000), Goad (2001), Goad and Rose (2002), and Clark (2003). The examples below are typical of children up to the age of three.

6.6.1 Complex onsets

According to Bernhardt and Stemberger (1997, p. 385), "the most common resolution of initial consonant clusters is deletion", i.e. violation of MAX-IO. As for epenthesis, this "is a minority strategy across children for rescuing consonants" (Bernhardt and Stemberger 1997, p. 389). This is the prevailing view in the literature on the acquisition of first language phonology and it is supported by a host of studies. Thus, in the studies reviewed by Weinberger (1994, p. 287), "vowel epenthesis is extremely rare", and ranges between 1 % and 3.7 % of forms produced. Young-Scholten and Archibald (2000, p. 70) state that "[o]ne robust finding from first language acquisition research is that the insertion of vowels to break up consonant clusters (epenthesis) does not figure prominently in child phonologies". According to them, "studies set the frequency of epenthesis in child language at 1-2 percent of

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[10] Such forms may have existed in the superstratal input as well (Norval Smith, personal communication, October 2004).

words produced" (Young-Scholten and Archibald 2000, p. 70). A rare, dissenting, opinion is voiced by Major (1987, p. 216) who claims that "[c]hildren frequently produce [səpun] or [əspun] for *spoon*"[11].

The most typical strategies used for the resolution of onset clusters are:

(66) Deletion of /s/ in reflexes of /s/ + obstruent clusters:
[top] (E *stop*) 'stop' (Clark 2003, p. 115)
(67) Deletion of /s/ in reflexes of /s/ + nasal clusters:
[mɪt] (E *Smith*) 'Smith' (O'Grady and Archibald 2000, p. 407)
(68) Deletion of nasal in reflexes of /s/ + nasal clusters:
[sail] (E *smile*) 'to smile' (Vihman 1996, p. 238)
(69) Deletion of /s/ in reflexes of /s/ + /l/ cluster:
[saimi] (E *slimy*) 'slimy' (Vihman 1996, p. 238)
(70) Deletion of /l/ in reflexes of /s/ + /l/ cluster:
[laid] (E *slide*) 'slide' (Clark 2003, p. 215)
(71) Deletion of liquid in reflexes of stop + liquid clusters:
[bakə] (E *blanket*) 'blanket' (Fee 1995, p. 46)
(72) Deletion of liquid in reflexes of fricative + liquid clusters:
[fʌm] (E *from*) 'from' (Clark 2003, p. 115)
(73) Deletion of glide in reflexes of fricative + glide clusters:
[fu:] (E *few*) 'few' (Clark 2003, p. 115)
(74) Fusion (coalescence):
[fok] (E *smoke*) 'smoke' (Goad and Rose 2002, p. 222), [+continuant] from /s/ and [LAB] from /m/

Two phenomena are conspicuously absent from child phonologies: vowel harmony and string-adjacent assimilation[12] (Goad 2001).

In table (75) I compare the treatment of complex onsets in the acquisition of first language phonology and in the English pidgins and creoles analyzed in chapters **3** and **4**:

[11] For Major (1987), "epenthesis" covers both anaptyxis before and into an illicit consonant cluster.
[12] Goad's term corresponds to our transcategorial assimilation of the type C-to-V or V-to-C.

(75) Complex onsets in acquisition of L1 phonology and in English pidgins and creoles

Strategy	**First language acquisition**	**English pidgins and creoles**
No clusters if no /l/ vs /r/ contrast	attested	Sar, Alu
Deletion of /s/ in reflexes of /s/ + obstruent clusters	attested	all Atlantic varieties, Krl
Deletion of /s/ in reflexes of /s/ + nasal clusters	attested	not attested
Deletion of nasal in reflexes of /s/ + nasal clusters	attested	not attested
V-to-C transcategorial assimilation in reflexes of /s/ + [LABIAL] nasal clusters	?	Ndy, Jam, NauPE
V-to-C transcategorial assimilation in reflexes of /s/ + [CORONAL] nasal clusters	not attested	Jam
Deletion of /s/ in reflexes of /s/ + /l/ clusters	attested	not attested
Deletion of /l/ in reflexes of /s/ + /l/ clusters	attested	not attested
Deletion of liquid in reflexes of stop + liquid clusters	attested	Alu (?/rare)
Deletion of liquid in reflexes of fricative + liquid clusters	attested	Alu (?/rare)
Deletion of glide in reflexes of fricative + glide clusters	attested	not attested
Fusion (coalescence)	attested	not attested
Double (non-minimal) epenthesis	?/rare	attested only in pidgins: MelPE (rare), SolP (rare)
Epenthesis with default vowel	attested (rare)	attested (all)
Epenthesis with vowel copying	attested (rare)	Sar, Alu, Kwi, Ndy, GhaPE, NigPE, TP, TSC
Epenthesis with vowel harmony	not attested	NigPE
Epenthesis with coronal spreading	not attested	Jam
Epenthesis with labial attraction	not attested	NigPE, TP, Bis
V-to-C transcategorial assimilation in reflexes of /s/ + [LABIAL] nasal clusters	?	Ndy, Jam, NauPE
V-to-C transcategorial assimilation in reflexes of /s/ + [CORONAL] nasal clusters	not attested	Jam
C-to-V transcategorial assimilation in reflexes of other obstruent + liquid clusters	?	TP, Bis, SolP

6.6.2 Complex codas

Here again deletion of one consonant is, by all accounts, the most favoured strategy. As noted by Bernhardt and Stemberger (1997, p. 406), epenthesis is "a minority option in onset clusters, but it appears to be *even rarer* in codas [emphasis added]". Consider the typical strategies for the resolution of clusters in coda position:

(76) Deletion of [CORONAL] segment in reflexes of consonant + [CORONAL]:
[fas] (E *fast*) 'fast' (Bernhardt and Stemberger 1997, p. 404)
(77) Deletion of stop in reflexes of fricative + stop clusters:
[fis] (E *fix*) 'to fix' (Bernhardt and Stemberger 1997, p. 404)
(78) Deletion of nasal in reflexes of nasal + voiceless stop clusters:
[tɛ̃t] (E *tent*) 'tent' (Clark 2003, p. 115)
(79) Syllabification or vocalization of liquid in reflexes of liquid + stop clusters:
[hɛʊp] (E *help*) 'help' (Bernhardt and Stemberger 1997, p. 407)

6.6.3 Simple codas

In reflexes of simple codas too consonant deletion is the most common strategy (see e.g. Fee 1995, p. 45, Bernhardt and Stemberger 1997, p. 379). The following strategies are used by children for the resolution of illicit simple codas:

(80) Deletion of consonant
[kæt] (E *cat*) 'cat' (Fee 1995, p. 45)
(81) Deletion of consonant and compensatory lengthening
[bi:] (E *bib*) 'bib' (Bernhardt and Stemberger 1997, p. 380)
(82) Syllabification or vocalization of glide
[maɪ.ʊ] (E *smile*) 'to smile' (Bernhardt and Stemberger 1997, p. 379)
(83) Paragoge with unmarked vowel
[da:unə] (E *down*) 'down' (Vihman 1996, p. 257)
(84) Paragoge with vowel copying
[hata] (E *hot*) 'hot' (Bernhardt and Stemberger 1997, p. 377)

As with onsets, vowel harmony and string-adjacent assimilation are not found in codas (Goad 2001). A comparison of the strategies used in first language acquisition and in the English pidgins and creoles is set out in table (85):

(85) Codas in acquisition of L1 phonology and in English pidgins and creoles

Strategy	**First language acquisition**	**English pidgins and creoles**
Complex codas		
Deletion of final [CORONAL] segment in reflexes of consonant + [CORONAL]	attested	attested (all)
Deletion of nasal in reflexes of nasal + voiceless stop clusters (sonority effects)	attested	not attested
Paragoge in reflexes of nasal + voiceless stop	not attested	Bar, Sra, Jam, NigPE
Deletion of nasal in reflexes of nasal + voiceless stop	attested	not attested
Epenthesis in reflexes of liquid + stop clusters	not attested	StK, NigPE, Gul, Jam, Kri TP, Bis
Deletion of stop in reflexes of stop + fricative clusters	attested	not attested
Epenthesis in reflexes of stop + /s/ clusters	not attested	Guy, TP, Bis, SolIP
Syllabification or vocalization of liquids in reflexes of liquid + stop clusters	attested	not attested
Simple Codas		
Deletion of consonant	attested (widely)	attested (rare)
Deletion of consonant and compensatory lengthening	attested	not attested
Paragoge with unmarked vowel	attested	Sra, Sar
Paragoge with vowel copying	attested	Sra, Sar, Alu, Kwi, Ndy, GhaPE, NigPE, SolIP
Paragoge with vowel harmony	not attested	Sra, Sar, NigPE
Paragoge with labial attraction	not attested	Sra, Sar, NigPE

As can be seen from tables (75) and (85), child and pidgin and creole phonologies do not closely match. Moreover, some strategies, found in first language acquisition of phonology occur only in pidgins.

6.7 Acquisition of second language phonology

In this section I summarize some of the findings of research on the acquisition of second language phonology. Here is the literature consulted: Anderson (1987), Archibald (1998a and 1998b), Archibald and Vanderweide (1997), Benson (1988), Broselow (1983, 1984 and 1988), Broselow, Chen and Wang (1998), Broselow and Finer (1991), Carlisle (1991, 1994), Eckman (1981a, 1981b, 1984, 1985, 1987a, 1987b, and 1991), Eckman and Iverson (1993, 1994 and 1997), Hancin-Bhatt and Bhatt (1997), Hodne (1985), Karimi (1987), Major (1987, 1994a, 1994b, and 1995), Osburne (1996), Sato (1984), Singh (1991, 1995, and 1997), Singh and Ford (1987), Tarone (1972, 1980, 1984, 1987), Tropf (1987), Weinberger (1987, 1994 and 1997), and Young-Scholten and Archibald (2000).

As is well known, a host of models have been developed to account for interlanguage phonology. These include the Markedness Differential Hypothesis (Eckman 1987a), the Ontogeny Model (Major 1987), the Minimal Sonority Distance parameter (Broselow and Finer 1991), the Interlanguage Structural Conformity Hypothesis (Eckman 1991)[13]. All of them have been applied to, among others, the analysis of syllable restructuring in the acquisition of second language phonology. The following are some of the findings of research on interlanguage phonology. First, Carlisle (1994, p. 232) concludes that "the case for CV syllable has probably been overstated", especially in Tarone (1972, 1976, 1980 and 1987), given the assumption that "syllable modifications in the L2 would most naturally result in CV syllables". Second, onsets and codas obeying the sonority sequencing generalization are less frequently modified than those that violate it (Carlisle 1994, pp. 230–231, Young-Scholten and Archibald 2000, p. 73). Third, the results as to the relative preponderence of either epenthesis or deletion as repair strategies are contradictory (Carlisle 1994, Young-Scholten and Archibald 2000, p. 77, *contra* Weinberger 1994, p. 288, and Plag and Uffman 2000). Fourth, to account for the preeminence of epenthesis with advanced L2 learners, Weinberger (1994) proposes a "recoverability principle" to constrain lexical ambiguity. Deletion, seen as being a nonrecoverable operation, proliferates lexical ambiguity, whereas epenthesis, which is recoverable, limits it. The explanatory power of Weinberger's recoverability principle has been questioned by Young-Scholten and Archibald (2000, pp. 80–82). Finally, according to

[13] For a recent critical discussion of these models see Archibald (1998, pp. 137–176).

Major 1987, p. 216), "no *double fortitions* occur that involve the same segments". The reason is that "once a vowel has been inserted (either before the consonant cluster or between the two consonants) the sequence is pronounceable and there is no further motivation for epenthesis"[14] (Major 1987, p. 216). Major's claim is equivalent to the finding that "[e]penthesis always applies *minimally* [...] precisely to the extent that is necessary to improve structural markedness" (Kager 1999, p. 105)[15].

6.7.1 Complex onsets

With respect to complex onsets let me just note that Archibald (1998a and 1998b), Archibald and Vanderweide (1997), and Young-Scholten and Archibald (2000, p. 83) claim that the occurrence of obstruent + liquid onset clusters in any language implies an /l/ vs /r/ contrast.

Consider the comparative data summarized in table (86):

(86) Complex onsets in L2 acquisition of English phonology and in English pidgins and creoles

Strategy	**L1 of learners acquiring English**	**English pidgins or creoles**
No clusters if no /l/ vs /r/ contrasts	Korean	Sar, Alu
Deletion of rightmost member(s)	Finnish	not attested
Epenthesis	Japanese	Assimilated CamPE
Prothesis	Iraqi Arabic	not attested
Different treatment of all /s/ + consonant clusters	Persian	not attested
Treatment of /s/ + obstruent clusters different from other /s/-initial clusters (sonority effects)	Spanish, Egyptian Arabic	Bar, StK, Tri, Tbg, Atg, Jam, Kri, Gul
Different treatment of /s/ in three- and two-member clusters (deletion vs epenthesis)	?	Sar, Ndy, GhaPE
Prothesis and epenthesis in reflexes of /s/ + obstruent clusters	not attested	MelPE (rare), SolIP (rare)
Deletion of liquid in reflexes of stop + liquid clusters	Portuguese (rare), Cantonese (rare), Korean	Alu (?/rare)
Deletion of liquid in reflexes of fricative + liquid clusters	Korean	Alu (?/rare)
Epenthesis with vowel copying in reflexes of other obstruent + liquid clusters	?	GhaPE, NigPE
Epenthesis with vowel harmony in reflexes of other obstruent + liquid clusters	?	NigPE
V-to-C transcategorial assimilation in reflexes of /s/ + [LAB] stops	?	Ndy, Jam, NauPE
C-to-V transcategorial assimilation in reflexes of other obstruent + liquid clusters	?	TP, Bis, SolIP
Unmarked epenthetic vowel	Persian, Korean	attested (all)

[14] Major (1987) uses "epenthesis" as a cover term for both prothesis and epenthesis. Cf. note 11.
[15] With Kager (1999) "epenthesis" covers both epenthesis and paragoge.

6.7.2 Complex codas

Deletable consonants are a matter of some dispute. Thus, Eckman (1987b, pp. 151 and 153) claims that in deletion, “the deletable consonant cannot be predicted on the basis of its quality or position in the [coda] cluster”. Some of his subjects occasionally produced forms such as the following:

(87) Cantonese [æt] (E *act*) ‘act’ (Eckman 1987b, p. 148)
Korean [pæt] (E *pact*) ‘pact’ (Eckman 1987b, p. 150)

On the other hand, Tropf (1987, p. 185) writes that in every type of syllable-final cluster CØ is dominant while ØC is marginal.

6.7.3 Simple codas

The only repair strategies reported in the literature at my disposal are deletion, in e.g. Mandarin Chinese and in Cantonese, and paragoge with a default vowel, such as [ə] in Mandarin Chinese and in Cantonese or [i] in Korean.

A comparison of coda repair strategies in second language acquisition of phonology and in the English pidgins and creoles is provided in table (88):

(88) Codas in L2 acquisition of English phonology and in English pidgins and creoles

Strategy	**L1 of learners acquiring English**	**English pidgins and creoles**
Complex codas		
Deletion of final [COR] segment in reflexes of consonant + [COR]	Brazilian Portuguese, Korean, Cantonese, Japanese	attested (all)
Deletion of C_1 in CC clusters	attested (rare)	not attested
Paragoge in reflexes of nasal + voiceless stop	Italian	Bar, Sra, Jam, NigPE
Epenthesis in reflexes of liquid + stop clusters	?	StK, NigPE, Gul, Jam, Kri, TP, Bis
Epenthesis in reflexes of stop + /s/ clusters	Brazilian Portuguese	Guy, TP, Bis, SolIP
Simple Codas		
Deletion	Mandarin, Cantonese	not attested
Paragoge with default vowel	Mandarin, Cantonese, Korean	Sra, Sar
Paragoge with vowel copying	?	Sra, Sar, Alu, Kwi, Ndy, Jam, GhaPE, NigPE, SolIP
Paragoge with vowel harmony	?	Sra, Sar, NigPE
Paragoge with labial attraction	?	Sra, Sar, NigPE

6.8 Loanword phonology

Evidence from loanword phonology is also relevant since loanword adaptation essentially consists of the imposition of native language restrictions (Lacharité and Paradis 1993, Itô and Mester 1995a and 1995b, Paradis 1995, Paradis and Lacharité 1995 and 1997, Silverman 1992). More often than not, loanword phonology is very similar to the acquisition of second language phonology, since both involve transfer from the speakers’ first language. Moreover, loanword phonology may prove instrumental in determining the ranking of constraints for which there is no evidence in the native vocabulary (Hancin-Bhatt and Bhatt 1997, p. 355, Plag and Uffmann 2000, p. 331). As shown by many of the examples below, loanword phonology is characterized by the preponderence of epenthesis, i.e. of violations of DEP-IO. In Plag and Uffmann's (2000, p. 326), this is another illustration of the markedness reversal compared to the acquisition of first language phonology.

6.8.1 Complex onsets

What is striking about onsets is the frequently encountered special treatment of /s/-initial clusters, in particular /s/ + obstruent clusters.

As shown by Young-Scholten and Archibald (2000, p. 93), in earlier borrowings[16] with an onset cluster Finnish retains only the last consonant:

(89) *ranta* (S *strand*) 'waterfront' (Scholten-Young and Archibald 2000, p. 93)
lasi (S *glas*) 'glass' (Wuolle 1992, p. 69)

Japanese resorts exclusively to epenthesis, with [ɯ] as a default vowel:

(90) [sɯtoraikɯ] (E *strike*)

Mahootian (1997, p. 297) states that in Persian "[b]orrowed words with initial clusters [...] are broken up with a vowel to prevent word-initial CC". This is done, according to the author, in two ways. The illicit onset cluster "may be broken up via prothesis [...] resulting in a VC + C sequence" or "via anaptyxis [...], resulting in a CV + sequence" (Mahootian 1997, pp. 297–298). The author fails to notice that the first strategy only applies to loanwords with /s/-initial onset clusters[17]. Consider the examples below:

(91) *estudiyo* (F *studio*) 'studio' (Mahootian 1997, p. 298)
(92) *doroške* (R *drožki*) 'small carriage' (Mahootian 1997, p. 298)
færanse (F *France*) 'France' (Mahootian 1997, p. 298)

According to Steriade (1995, p. 136), "Hindi inserts *i* before *s*-obstruents clusters, and schwa between other C sequences":

(93) ɪstešan (E *station*) 'station' (Singh and Ford 1987, p. 167)
(94) kɪraɪst (E *Christ*) 'Christ' (Singh and Ford 1987, p. 167)

Inter-dialectal variation is reported to exist with respect to the treatment of /s/ = obstruent onset clusters (Hyman 1975, p. 163): [iste•cn] vs [scte•cn]. The fact remains, however, that prothesis, if it occurs, is restricted to /s/ + obstruent clusters.

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[16] Additional abbreviations in the examples: F= French; G= German; R= Russian; S= Swedish.
[17] Except for /sw/, presumably. For converging evidence from L2 acquisition by speakers of Persian, see Karimi (1987, pp. 309–310) and section **6.7.1**.

Earlier borrowings in Hungarian also attest to the different treatment of onset clusters of the type /s/ + obstruent with respect to the site of the anaptyctic vowel[18]:

(95) *iskola* [iʃkola] ‘school’
(96) *görög* ‘Greek’

Lewis (1989, p. 14) writes that in Turkish “[n]ative words do not begin with two consonants” and that “there is a tendency to separate two consonants at the beginning of foreign words”. He further notes that “other old borrowings add an initial vowel, usually **i**, to avoid starting a word with two consonants”. In fact, the choice of the strategy depends on the type of onset cluster. While anaptyxis into the illegal onset cluster occurs with /s/- ones as well, prothesis is restricted to /s/- initial clusters:

(97) [tiren] (F *train*) ‘train’ (Lewis 1989, p. 14)
[sɯpor] (F *sport*) ‘sport’ (O’Grady and Archibald 2000, p. 46)
(98) *istasyon* (F *station*) ‘railway station’ (Lewis 1989, p. 193)
istimbot (E *steam-boat*) ‘steam-boat’ (Lewis 1989, p. 14)

In Standard Arabic, prothesis is typical of reflexes of /s/-initial onset clusters, although it occurs, rarely, with obstruent + liquid ones as well. However, epenthesis is only attested with the latter:

(99) [isfandʒ] (E *sponge*) ‘sponge’
[ista:d] (F *stade*) ‘stade’
[ikli:ni:ki:] (F *clinique*) ‘clinical’
(100) [kila:siki:] (F *classique*) ‘classic(al)’

Although “more often excluded clusters are resolved by anaptyxis” in Akan, only “s + C clusters are sometimes simplified to [s]” (Carter 1987, p. 232) via deletion of /s/:

(101) bɔ́ɔsutapú (E *bus stop*) ‘bus stop’ (Carter 1987, p. 232)

According to Carter (1987. pp. 238–239), in Yoruba “[u]npermitted consonant clusters are either simplified [...] or separated by anaptyctic vowel”. Again, what is not noticed is the fact that only /s/ + obstruent clusters may be subject to simplification via /s/ deletion:

(102) téshã (E *station*) ‘station’ (Carter 1987, p. 238)
(103) sítóofu (E *stove*) ‘stove’ (Carter 1987, p. 239)

According to Mwihaki (2001, pp. 140–141), [i] is the most frequently used “intrusive” vowel in Kikuyu[19]. Labial attraction is illustrated by the occurrence of [u]

[18] Andrei Avram (personal communication, February 2004).
[19] Alternative names and/or spellings include the following: *Gekoyo*, *(gi)Gikuyu* (Sala and Vintilă-

after a [LABIAL] consonant. The only "[c]ases of deviation", i.e. when "the epenthetic /u/ occurs in environments associated with /i/" (Mwihaki 2001, p. 142) triggered by the [LABIAL] voiceless fricative [ɸ]. However, the only examples provided by Mwihaki (2001, p. 142) consist of reflexes of /sp/ onset clusters. Note that the Kikuyu reflex of /s/ in loanwords is /θ/. Compare the following examples:

(104) *ndîroo* [ndirɔ:] (E *drawer*) 'drawer' (Mwihaki 2001, p. 141)
thîtoo [θitɔ:] (E *store*) 'store' (Mwihaki 2001, p. 140)
(105) *mburîki* [mbureki] (E *brake*) 'brake' (Mwihaki 2001, p. 142)
(106) *thubana* [θuɸana] (E *spanner*) 'spanner' (Mwihaki 2001, p. 142)

In Maori, "[c]onsonant clusters in words [...] are either broken up by the insertion of an epenthetic vowel, or are subject to cluster simplification" in loanwords (Bauer 1993, p. 544). In fact, the second strategy is applied only to /s/-initial onset clusters. Compare the following examples:

(107) *teihana* (E *station*) 'station' (Bauer 1993, p. 544)
(108) *parau* (E *plough*) 'plough' (Bauer 1993, p. 544)

Note that Maori does not have /s/ and replaces it by /t/, but the reflex of E *station* is not **teteihana*. The epenthetic vowel is mostly a copy of the vowel to the right, as in example (108).

Samoan is yet another language with a "very inflexible phonotactic structure" that "leads to rather extensive phonological changes of loanwords with consonant clusters and/or word-final consonants" (Mosel and Hovedhaugen 1992, p. 36). I have no relevant example for the treatment of /s/-initial onset clusters. Obstruent + liquid onset clusters are broken up by epenthesis. The epenthetic vowel is default [e], a copy of the vowel to the right or [u] imposed by a preceding [LABIAL] consonant:

(109) *teropika* (E *tropics*) 'tropics' (Mosel and Hovedhaugen 1992, p. 36)
(110) *kulū* (E *glue*) 'glue' (Mosel and Hovedhaugen 1992, p. 36)
(111) *puleke* (E *brake*) 'brake'(Mosel and Hovedhaugen 1992, p. 36)

Finally, according to Major (1987, p. 216), the principle that "no *double fortitions* occur that involve the same segments" (see **6.7.1**) holds for loanwords too:

(112) Brazilian P. [iskɔpi] not *[isikɔpi] (E *scope*) 'scope' (Major 1987, p. 216)

In table (113) I compare the strategies used to avoid complex onsets in loanword phonology and in English pidgins and creoles.

Rădulescu 1984, p. 190), and *Gĩkũyũ* (Mwihaki 2001).

(113) Complex onsets in loanword phonology and in English pidgins and creoles

Strategy	Loanword phonology	English pidgins or creoles
Deletion of leftmost member(s)	Finnish	not attested
Epenthesis	Japanese	Assimilated CamPE
Different treatment of all /s/-initial clusters	Persian, Turkish	not attested
Treatment of /s/ + obstruent clusters different from other /s/-initial clusters (sonority effects)	Hindi, Hungarian, Yoruba, Akan, Maori	Barbadian Creole, StK, Tri, Tbg, Atg, Jam, Kri, Gul
Different treatment of /s/ in three- and two-member clusters (deletion vs epenthesis)	?	Sar, Ndy, GhaPE
Prothesis and epenthesis in reflexes of /s/ + obstruent clusters	not attested	MelPE (rare), SolIP (rare)
Deletion of liquid in reflexes of stop + liquid clusters	?	Alu (?/rare)
Deletion of liquid in reflexes of fricative + liquid clusters	?	Alu (?/rare)
V-to-C transcategorial assimilation in reflexes of /s/ + [LABIAL] stops	Kikuyu	Ndy, Jam, NauPE
Epenthesis with default vowel	Kikuyu, Japanese, Maori	attested (all)
Epenthesis with vowel copying in reflexes of other obstruent + liquid clusters	Akan, Yoruba, Maori	GhaPE, NigPE
Epenthesis with vowel harmony in reflexes of other obstruent + liquid clusters	Akan, Yoruba	NigPE
C-to-V transcategorial assimilation in reflexes of other obstruent + liquid clusters	Kikuyu, Samoan	TP, Bis, SolIP

6.8.2 Complex codas

The following are strategies for the resolution of complex codas attested in loanword phonology:

(114) Deletion of final [COR] segment in reflexes of consonant + [COR]:
Indonesian *koran* (D *korant*) 'newspaper' (Teselkin & al. 1961, p. 434)

(115) Paragoge in reflexes of nasal + voiceless stop:
Finnish
Akan *táǹki* (E *tank*) 'tank' (Carter 1987, p. 232)
Yoruba *báǹki* (E *bank*) 'bank' (Carter 1987, p. 239)
Japanese *rampu* (D *lamp*) 'lamp'

(116) Epenthesis in reflexes of liquid + stop clusters:
Indonesian *pilem* (D *film*) 'film' (Oplt 1966, p. 361)

(117) Epenthesis in reflexes of stop + fricative clusters:
Portuguese [šerɔkis] (E *xerox*) 'xerox' (Major 1995, p. 135)
Indonesian *jenis* (Arabic *jins*) 'type, sex' (Teselkin et al 1961, p. 192)

6.8.3 Simple codas

Listed below are several types of paragoge found in loanword phonology. Examples from Akan and Yoruba are not included (but see **6.4.1**):

(118) Paragoge with default vowel:
Finnish *tuoli* (S *stol*) 'chair' (Young-Scholten and Archibald 2000, p. 93)
Kikuyu *keki* [kɛki] (E *cake*) 'cake' (Mwihaki 2001, p. 141)
Shona *gauni* (E *gown*) 'gown' (Uffmann 2001, p. 196)
Japanese *kisu* (E *kiss*) 'kiss'

Maori *kiriimi* (E *cream*) 'cream' (Bauer 1993, p. 544)
Samoan *-kulimi* (E *cream*) 'cream' (Mosel and Hovedhaugen 1992, p. 36)

(119) Paragoge with vowel copying:
Finnish *ranta* (S *strand*) 'waterfront'(Young-Scholten and Archibald 2000, p.93)
Kikuyu *thukuru* (E *school*) 'school' (Mwihaki 2001, p. 140)
Shona *bhuku* (E *book*) 'book' (Uffmann 2001, p. 196)
Maori *karaka* (E *clock*) 'clock' (Bauer 1993, p. 543)
Samoan *kulupu* (E *group*) 'group' (Mosel and Hovedhaugen 1992, p. 36)

(120) Paragoge with vowel harmony:
Finnish *koulu* (S *skola*) 'school' (Young-Scholten and Archibald 2000, p. 93)

(121) Paragoge with labial attraction:
Kikuyu *ngamu* [ŋamu] (E *gum*) 'gum' (Mwihaki 2001, p. 142)
Shona *puramu* (E *plum*) 'plum' (Uffmann 2001, p. 195)
Samoan *hamu-* (E *ham*) 'ham-' (Mosel and Hovedhaugen 1992, p. 36)

As can be seen in table (118), all strategies for the avoidance of illegal codas, whether complex or simple, found in English pidgins and creoles are also used in a variety of other languages:

(122) Codas in loanword phonology and in English pidgins and creoles

Strategy	**Loanword phonology**	**English pidgins and creoles**
Complex codas		
Deletion of final [COR] segment in reflexes of consonant + [COR]	Indonesian	attested (all)
Paragoge in reflexes of nasal + voiceless stop	Finnish, Akan, Yoruba, Japanese	Bar, Sra, Jam, NigPE
Epenthesis in reflexes of liquid + stop clusters	Indonesian	StK, NigPE, Gul, Jam, Kri TP, Bis
Epenthesis in reflexes of stop + /s/ clusters	Portuguese, Indonesian	Guy, TP, Bis, SolIP
Simple Codas		
Paragoge with default vowel	Finnish, Yoruba, Akan, Kikuyu, Japanese Maori, Samoan,	Sra, Sar
Paragoge with vowel copying	Yoruba, Akan, Kikuyu, Maori, Samoan	Sra, Sar, Alu, Kwi, Ndy, Jam,GhaPE, NigPE, SolIP
Paragoge with vowel harmony	Finnish, Yoruba, Akan	Sra, Sar, NigPE
Paragoge with labial attraction	Yoruba, Akan, Samoan	Sra, Sar, NigPE

Note, first, that the picture that emerges, i.e. a close match between syllable restructuring strategies in L2 acquisition of phonology and in English pidgins and creoles, accords well both with Alber and Plag's (1999) and Plag and Uffmann's (2000) claims with respect to language contact and with Weinberger's (1994) "recoverability principle". Second, the attestation of all strategies of syllable restructuring in non-creole languages as well provides independent motivation for some of the constraints suggested, e.g. NoCoda/LS, that look *prima facie* suspiciously language-specific.

6.9 Evidence from pidgin and creole phonology and theories of pidginization and creolization

Sections **6.7** and **6.8** have adduced evidence that syllable restructuring in English pidgins and creoles closely parallels the one occurring in second language rather than in first language acquisition. With pidgins, this poses no problems since parallels between pidgins and second language acquisition have long been made (e.g. Schumann 1978, Valdman 1983, and, more recently, Muysken and Veenstra 1995, p. 129, Sebba 1997, pp. 83–91, Avram 2000b, Muysken 2001, and Winford 2003, pp. 278–288). With creoles, however, this does pose a problem for those who claim, following Bickerton (e.g.1977, 1981, and 1984), that creoles are developed by children. Bickerton, somewhat inconsistently, does allow for substratal influence on creole phonology. However, as argued by Mufwene (2001, pp. 131) "creoles could not possibly have been invented by children" since "[s]tructurally, they would be systems in an arrested developmental stage".

The commonalities of English pidgins and creoles with second language acquisition may be taken to support the so-called gradual creolization hypothesis (see e.g. Arends 1993, Arends, Muysken and Smith 1995, p. 321, Avram 2000b, and Thomason 2001, pp. 183–188). However, let me stress that establishing a striking degree of similarity between syllable restructuring in English pidgins and creoles and in second language acquisition does not necessarily commit me to theories of pidginization and creolization as imperfect second language acquisition. In fact, the results are perfectly compatible with the "creativist" account developed by Baker (1990, 1994, 1995b) and in Baker and Huber (2001). In this theory, English is not really a target language and there is no motivation on the part of speakers of substrate languages to acquire it. Pidgins, then, are successful means of interethnic communication created by the participants in the early contact situation. It is only at a later stage that pidgins "become a desirable acquisition even if only as an auxiliary language" (Baker and Huber 2001, p. 193). The "creativist" account in its turn is compatible with both universal and substrate influences in the restructuring of syllables in the English pidgins and creoles.

6.10 Optimality theory and syllable restructuring in English pidgins and creoles

It is not the aim of the present thesis to claim that optimality theory is uniquely suited to the study of English pidgins and creoles. However, a few closing remarks are, perhaps, in order.

Thus, optimality theory provides an insightful, coherent, and intuitively natural approach to phonological processes that can only be accounted for with reference to syllable structure. Much of what is typical of syllable restructuring in pidgin and creole phonology can be captured by a rather small set of constraints.

As I have tried to show, the occurrence of language change (chapters **3** and **5**) and of variation (in **6.3.3.7** through **6.3.3.11**) in English pidgins and creoles can be straightforwardly captured in terms of constraint reranking as optimality theory would predict. Although this thesis has not dealt extensively with variation, it does confirm the adage that diachronic change is rooted in synchronic variation. This accords well with the fact that both language change and variation are captured in optimality theory in terms of reranking of constraints. Thus, of two (or more) competing, alternative rankings, one may lead to diachronic change.

An argument can also be made for constraints with respect to epenthesis and paragoge[20] in interlanguage phonology, which has been shown to exhibit significant similarities with syllable restructuring in the English pidgins and creoles. In rule-based approaches, paragoge with e.g. Mandarin learners of English is formalized as follows[21]:

(123) $\emptyset \rightarrow$ ə / [-sonorant, +voice] __ #

Four problems arise when positing such rules. First, the rule is not attested in Mandarin. This is not surprising since epenthesis is universally marked, both synchronically and diachronically (see **6.2**). However, since there is no independent motivation for such a rule, this effectively excludes transfer *qua* transfer of rules. Second, although [ə] is a default epenthetic and paragogic vowel in many languages (see Kager 1999, p. 124, and section **6.2**), it is not universal. Indeed, in e.g. English pidgins and creoles [i] is the default epenthetic and paragogic vowel. Third, rules of paragoge cannot be independently motivated for *any* native[22] language either (see e.g.

[20] Along the lines of Hancin-Bhatt and Bhatt (1997, p. 355), and of Plag and Uffmann (2000, p. 327).
[21] By Eckman (1981, p. 206, and 1984, p. 98).
[22] Eckman (1984) uses the term "primary" language.

Eckman 1984, p. 97). Again, this excludes an account in terms of transfer of rules. Fourth, to suggest that interlanguages may violate a constraint on native languages (Eckman 1984, pp. 97–98) places interlanguage outside the scope of Universal Grammar[23]. This is not, I think, tenable or desirable. On the contrary, assuming constraints on syllable structure has no such undesirable consequences. Such constraints and their ranking are only observable with loanwords. Therefore, transfer is seen as transfer of constraints. As such, it can be seen as yet another instantiation of the emergence of the unmarked (McCarthy and Prince 1994; cf. also Broselow, Chen and Wang 1998). *Mutatis mutandis*, the same applies to deletion. With pidgins and creoles, then, deletion, epenthesis, and paragoge can be conceptualized as transfer of constraints.

Also, as shown in **6.4** and **6.5.2**, some of the rankings in several English pidgins and creoles cannot be traced back to the phonologies of the substrate languages. This accords well with the finding that in interlanguage phonology too some rankings are neither those of the first nor those of the target language (see **2.4**).

Consider, finally, the commonalities of the English pidgins and creoles with loanword phonology. As in the latter, two basic challenges have to be met: the need to preserve as much information from the source form (i.e. in the lexifier) as possible, and the need to satisfy the phonological constraints of the substrate languages. This amounts to a conflict between faithfulness constraints (i.e. faithfulness to the input) and well-formedness constraints (i.e. on the output form) on syllable structure. Input forms are interpreted in terms of native segments and accommodated in legitimate syllabic positions. This neatly parallels Silverman's (1992) distinction between the parses at the *perceptual* level and at the *operative* level respectively in loanword phonology.

These are, then, some of the reasons for which optimality theory does seem to be suited to the analysis of syllable restructuring in pidgin and creole languages.

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[23] Muysken and Veenstra (1995, p. 123) write that "pidgins need not conform to UG", but do not elaborate the point.

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ON THE SYLLABLE STRUCTURE OF ENGLISH PIDGINS AND CREOLES

- APPENDICES -

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Contents

3

The treatment of /s/-initial onset clusters

Appendix 1: Early Barbadian

/str/
1835 *trike* (E *strike*) 'to strike' (Fields 1995, p. 95)
1840 *trong* (E *strong*) 'strong' (Fields 1995, p. 95)

/sp/
1835 *'peak* (E *speak*) 'to speak' (Rickford and Handler 1994, p. 242)

/st/
1789 *tand a* (E *stand*) 'stand' (Rickford and Handler 1994, p. 233)

Appendix 2: Early Saint Kittitian

/sp/
1785 *pake* (E *speak*) 'to speak' (Baker & al. 1999, p. 26)
1785 *pen* (E *spend*) 'to spend' (Baker & al. 1999, p. 41)
1785 *perrit* (E *spirit*) 'spirit' (Baker & al. 1999, p. 45)
1785 *pit* (E *spit*) 'to spit' (Baker & al. 1999, p. 11)
1834 *peke* (E *speak*) 'to speak' (Parkvall and Edlund 1998)

/st/
1785 *tan* (E *stand*) 'to stand' (Baker & al. 1999, p. 8)
1785 *tick* (E *stick*) 'cane' (Baker & al. 1999, p. 16)
1785 *top* (E *stop*) 'stop' (Baker & al. 1999, p. 28)
1834 *tan* (E *stand*) 'stand' (Parkvall and Edlund 1998)

/sw/
1785 *sweet* (E *sweet*) '(to be) delicious, tasty' (Baker & al. 1999, p. 12)

Appendix 3: Early Trinidadian English Creole

/sp/
1845 *pye-glass* (E *pye-glass*) 'spy-glass' (Winer 1984, p. 207)
1847 *peak* (E *speak*) 'speak' (Winer 1997, p. 76)

/st/
1827 *tan* (E *stand*) 'to stand' (Winer 1993, p. 79)
1827 *tocking* (E *stockings*) 'stockings' (Winer 1993, p. 80)
1839 *tomack* (E *stomach*) 'stomach' (Winer 1997, p. 73)

1839 *tarch* (E *starch*) 'starch' (Winer 1997, p. 73)
1839 *tiff* (E *stiff*) 'stiff' (Winer 1997, p. 73)
1839 *tomack-ache* (E *stomach ache*) 'stomach ache' (Winer 1997, p. 73)
1845 *tory* (E *story*) 'story' (Winer 1984, p. 208)
1847 *tan up* (E *stand up*) 'to stand up' (Winer 1997, p. 76)
1847 *tore* (E *store*) 'store' (Winer 1997, p. 76)
1848 *tan up* (E *stand up*) 'to stand up' (Winer 1997, p. 79)
1848 *tation* (E *station*) 'station' (Winer 1997, p. 79)
1848 *tation* (E *station*) 'police station' (Winer 1997, p. 81)
1848 *tuff* (E *stuff*) 'stuff' (Winer 1997, p. 82)
1852 *'teer* (E *steer*) 'to steer' (Winer 1984, p. 194)
1853 *tay* (E *stay*) 'to stop' (Winer 1993, p. 88)

/sk/
1827 *kin* (E *skin*) 'skin' (Winer 1993, p. 79)
1845 *kin* (E *skin*) 'skin' (Winer 1984, p. 207)
1852 *cool* (E *school*) 'school' (Winer 1984, p. 195)
1853 *kin* (E *skin*) 'skin' (Winer 1993, p. 90)
1854 *kin* (E *skin*) 'skin' (Winer and Rimmer 1994, p. 246)

Appendix 4: Early Tobagonian

/st/
1883 *tan* (E *stand*) 'to stand' (Winer and Gilbert 1987, p. 255)
1883 *tand* (E *stand*) 'to stand' (Winer and Gilbert 1987, p. 255)
1883 *teal* (E *steal*) 'to steal' (Winer and Gilbert 1987, p. 239)
1883 *tone* (E *stone*) 'stone' (Winer and Gilbert 1987, p. 257)
1883 *top* (E *stop*) 'to stop' (Winer and Gilbert 1987, p. 256)
1883 *tory* (E *story*) 'story' (Winer and Gilbert 1987, p. 259)
1884 *tan* (E *stand*) 'to stand' (Winer 1993, p. 93)

Appendix 5: Early Sranan

Reflexes of /s/ + obstruent clusters
/str/
1765 *trang hede* (E *strong, head*) 'by force' (Arends and Perl 1995, p. 206)
1765 *trangen* (E *strong*) 'strong' (Arends and Perl 1995, p. 99)
1781 *tranga* (E *strong*) 'strength' (Bruyn 1995, p. 196)
1894 *tranga* (E *strong*) 'strength' (Bruyn 1995, p. 212)
1777 *tringee* (E *string*) 'string' (Smith 1987, p. 368)
1855 *triengi* (E *string*) 'string' (Smith 1987, p. 367)
1864 *tranga* (E *strong*) 'strong' (Lichtveld and Voorhoeve 1980, p. 104)
1864 *tranga-tranga* (E *strong*) 'strongly' (Lichtveld and Voorhoeve 1980, p. 112)
1893 *tranga* (E *strong*) 'strongly' (Voorhoeve and Lichtveld 1975, p. 126)

/skr/

1777 *crassy* (E *scratch*) 'to scratch' (Smith 1987, p. 368)
1780 *krassi* (E *scratch*) 'to scratch' (Smith 1987, p. 368)
1783 *krassi* (E *scratch*) 'to scratch' (Smith 1987, p. 368)
1850 *krasi* (E *scratch*) 'to scratch' (Smith 1987, p. 368)
1855 *krassi* (E *scratch*) 'to scratch' (Smith 1987, p. 368)
1855 *krebi* (E *scrape*) 'to scrape' (Smith 1987, p. 173)

/skw/

1798 *kwiensie* (E *squeeze*) 'to squeeze' (Smith 1987, p. 236)
1855 *kwíensi* (E *squeeze*) 'to squeeze' (Smith 1987, p. 236)
1856 *kwinsi* (E *kwinsi*) 'to squeeze' (Smith 1987, p. 236)
1765 *scribi* (D *schrijven*) 'to write' (Arends and Perl 1995, p. 121)
1765 *schribi man* (D *schrijven* + - *man*) 'bookkeeper' (Arends and Perl 1995, p. 228)
1765 *schrifi man* (D *schrijven* + - *man*) 'bookkeeper' (Arends and Perl 1995, p. 115)
1765 *schrifiman* (D *schrijven* + - *man*) 'bookkeeper' (Arends and Perl 1995, p. 231)

/sp/

1765 *spoin* (E *spoin*) 'spoon' (Arends and Perl 1995, p. 112)
1780 *poli* (E *spoil*) 'to spoil' (Smith 1987, p. 329)
1783 *pikki* (E *speak*) 'to speak' (Smith 1987, p. 403)
1783 *pikkie* (E *speak*) 'to answer' (Voorhoeve and Lichtveld 1975, p. 286)
1783 *poli* (E *spoil*) 'to spoil' (Smith 1987, p. 329)
1783 *pori* (E *spoil*) 'to spoil' (Smith 1987, p. 329)
1850 *pori* (E *spoil*) 'to spoil' (Smith 1987, p. 329)
1855 *peki* (E *speak*) 'to speak' (Smith 1987, p. 403)
1855 *piki* (E *speak*) 'to speak' (Smith 1987, p. 403)
1855 *pori* (E *spoil*) 'to spoil' (Smith 1987, p. 329)
1856 *pori* (E *spoil*) 'to spoil' (Smith 1987, p. 329)
1864 *piki* (E *speak*) 'to answer' (Lichtveld and Voorhoeve 1980, p. 112)
1864 *pori* (E *spoil*) 'to destroy' (Voorhoeve and Lichtveld 1975, p. 104)
1893 *piki* (E *speak*) 'to answer' (Voorhoeve and Lichtveld 1975, p. 120)
1893 *pori* (E *spoil*) 'to destroy' (Voorhoeve and Lichtveld 1975, p. 128)
1894 *piki* (E *speak*) 'to answer' (Bruyn 1995, p. 212)

/st/

1765 *tan* (E *stand*) 'to stand' (Smith 1987, p. 216)
1765 *tan oppe* (E *stand up*) 'to stand up' (Arends and Perl 1995, p. 124)
1765 *tieri* (E *still*) 'still' (Arends and Perl 1995, p. 174)
1765 *tikki* (E *stick*) 'stick' (Arends and Perl 1995, p. 110)
1765 *tinki* (E *stink*) 'to stink' (Smith 1987, p. 277)
1765 *tiri* (E *still*) 'still' (Arends and Perl 1995, p. 120)
1765 *tiri* (E *still*) 'still' (Arends and Perl 1995, p. 200)
1765 *tiriman* (E *steer, man*) 'helmsman' (Arends and Perl 1995, p. 230)
1765 *toli* (E *story*) 'talk, discussion' (Arends and Perl 1995, p. 142)
1765 *tooli* (E *story*) 'story' (Arends and Perl 1995, p. 213)

1770 *tan* (E *stand*) 'to be' (Arends and Perl 1995, p. 77)
1770 *tan* (E *stand*) 'to stay' (Arends and Perl 1995, p. 78)
1770 *tan* (E *stand*) 'to wait' (Arends and Perl 1995, p. 80)
1777 *tingee* (E *stink*) 'to stink' (Smith 1987, p. 277)
1780 *tan* (E *stand*) 'to stand' (Smith 1987, p. 216)
1781 *stoon* (E *stone*) 'stone' (Bruyn 1995, p. 176)
1781 *tann* (E *stand*) 'to stay' (Bruyn 1995, p. 59)
1781 *tori* (E *story*) 'story' (Bruyn 1995, p. 221)
1783 *tann* (E *stand*) 'to stand' (Smith 1987, p. 216)
1783 *tan* (E *stand*) 'to wait' (Voorhoeve and Lichtveld 1975, p. 286)
1783 *tappou* (E *stop*) 'to stop' (Smith 1987, p. 173)
1783 *tori* (E *story*) 'story' (Smith 1987, p. 317)
1798 *tam* (E *stand*) 'to stand' (Smith 1987, p. 216)
1798 *tan* (E *stand*) 'to stand' (Smith 1987, p. 216)
1837 *toori* (E *story*) 'story' (Lichtveld and Voorhoeve 1980, p. 296)
1837 *vlagra-tikki* (E *flag, stick*) 'flag pole' (Lichtveld and Voorhoeve 1980, p. 296)
1850 *tan* (E *stand*) 'to stand' (Smith 1987, p. 216)
1850 *tori* (E *story*) 'story' (Smith 1987, p. 317)
1855 *tan* (E *stand*) 'to stand' (Smith 1987, p. 216)
1855 *tapoe* (E *stop*) 'to stop' (Smith 1987, p. 173)
1855 *tíengi* (E *stink*) 'to stink' (Smith 1987, p. 276)
1855 *tori* (E *story*) 'story' (Smith 1987, p. 317)
1856 *tan* (E *stand*) 'to stand' (Smith 1987, p. 216)
1856 *tapo* (E *stop*) 'to stop' (Smith 1987, p. 173)
1856 *tori* (E *story*) 'story' (Smith 1987, p. 317)
1864 *tiki* (E *stick*) 'stick' (Lichtveld and Voorhoeve 1980, p. 104)
1864 *tori* (E *story*) 'story' (Lichtveld and Voorhoeve 1980, p.102)
1893 *tan* (E *stand*) 'to stay' (Voorhoeve and Lichtveld 1975, p. 120)
1893 *tapoe* (E *stop*) 'to stop' (Voorhoeve and Lichtveld 1975, p. 122)
1893 *tori* (E *story*) 'story' (Voorhoeve and Lichtveld 1975, p. 120)
1894 *tori* (E *story*) 'story' (Bruyn 1995, p. 71)

/sk/
1781 *skin* (E *skin*) 'body' (Bruyn 1995, p. 57)

Exceptions: reflexes of English etyma
/sp/
spéri (E *spell*) 'spell' (Smith 1987, p. 229)
spíti (E *spit*) 'to spit' (Sebba 1982, p. 25)
spuku (E *spook*) 'spook' (Echteld 1961, p. 44)

/st/
stári (E *star*) 'star' (Smith 1987, p. 230)
stedi (E *steady*) 'steady' (Echteld 1961, p. 45)
stow (E *stow*) 'stow' (Sebba 1982, p. 25)

/sk/
skúna (E *schooner*) 'schooner' (Smith 1987, p. 229)

Exceptions: reflexes of Portuguese and Dutch etyma
/sk/
skuma (P *escuma*) 'scum' (Smith 1987, 233)

/sp/
1765 *spekeri* (D *spijker*) 'nail' (Arends and Perl 1995, p. 159)
1765 *stoel* (D *stoel*) 'chair' (Arends and Perl 1995, p. 112)
1765 *stole* (D *stoel*) 'chair' (Arends and Perl 1995, p. 134)

Reflexes of /s/ + sonorant clusters
/sm/
1765 *smeri* (E *smell*) 'smell' (Arends and Perl 1995, p. 109)
1783 *smeri* (E *smell*) 'to smell' (Smith 1987, p. 328)
1798 *smelie* (E *smell*) 'to smell' (Smith 1987, p. 328)
1850 *smeri* (E *smell*) 'to smell' (Smith 1987, p. 328)
1855 *smeri* (E *smeri*) 'to smell' (Smith 1987, p. 328)
1856 *sméri* (E *smell*) 'to smell' (Smith 1987, p. 328)

/sn/
1781 *snekki* (E *snake*) 'snake' (Bruyn 1995, p. 186)
1783 *snekki* (E *snake*) 'snake' (Smith 1987, p. 410)
1855 *sineki* (E *snake*) 'snake' (Smith 1987, p. 410)
1855 *sneki* (E *snake*) 'snake' (Smith 1987, p. 410)

/sl/
1765 *slipi* (E *sleep*) 'to sleep' (Smith 1987, p. 365)
1765 *slibi* (E *sleep*) 'sleep' (Arends and Perl 1995, p. 110)
1765 *slibbi* (E *sleep*) 'to sleep' (Arends and Perl 1995, p. 127)
1770 *slipi* (E *sleep*) 'to sleep' (Arends and Perl 1995, p. 91)
1777 *sleeby* (E *sleep*) 'to sleep' (Smith 1987, p. 173)
1780 *slibi* (E *sleep*) 'to sleep' (Smith 1987, p. 365)
1783 *slibi* (E *sleep*) 'to sleep' (Smith 1987, p. 365)
1783 *sribi* (E *sleep*) 'to sleep' (Smith 1987, p. 365)
1798 *sliebie* (E *sleep*) 'to sleep' (Smith 1987, p. 365)
1850 *slibi* (E *sleep*) 'to sleep' (Smith 1987, p. 365)
1855 *slíbi* (E *sleep*) 'to sleep' (Smith 1987, p. 365)
1855 *sribi* (E *sleep*) 'to sleep' (Smith 1987, p. 365)
1856 *slibi* (E *sleep*) 'to sleep' (Smith 1987, p. 365)

/sw/
1783 *sibi* (E *sweep*) 'to sweep' (Smith 1987, p. 172)
1783 *swali* (E *swallow*) 'to swallow' (Smith 1987, p. 314)
1783 *swari* (E *swallow*) 'to swallow' (Smith 1987, p. 314)

1783 *sweli* (E *swear*) ‘to swear’ (Smith 1987, p. 328)
1783 *swelli* (E *sweear*) ‘to swear’ (Smith 1987, p. 328)
1783 *sweri* (E *swear*) ‘to swear’ (Smith 1987, p. 328)
1850 *swali* (E *swali*) ‘to swallow’ (Smith 1987, p. 314)
1850 *swéri* (E *swear*) ‘to swear’ (Smith 1987, p. 328)
1855 *síbi* (E *sweep*) ‘to sweep’ (Smith 1987, p. 172)
1855 *swâri* (E *swallow*) ‘to swallow’ (Smith 1987, p. 314)
1855 *swéli* (E *swear*) ‘to swear’ (Smith 1987, p. 328)
1856 *síbi* (E *sweep*) ‘to sweep’ (Smith 1987, p. 172)
1856 *swali* (E *swallow*) ‘to swallow’ (Smith 1987, p. 314)
1856 *sweli* (E *swear*) ‘to swear’ (Smith 1987, p. 328)
1856 *sweri* (E *swear*) ‘to swear’ (Smith 1987, p. 328)

Appendix 6: Early Antiguan

/str/
-1832 *'tretch* (E *stretch*) ‘to stretch’ (Jeremiah 1976, p. 204)
-1832 *'trong* (E *strong*) ‘strong’ (Jeremiah 1976, 202)

/st/
-1832 *'tock* (E *stock*) ‘stock’ (Jeremiah 1976, p. 203)
-1832 *'top* (E *stop*) ‘stop’ (Jeremiah 1976, p. 202)
-1832 *'torne* (E *stone*) ‘stone’ (Jeremiah 1976, p. 203)
-1832 *'tornes* (E *stones*) ‘stones’ (Jeremiah 1976, p. 203)
-1832 *'tory* (E *story*) ‘story’ (Jeremiah 1976, p. 45)
1837 *'till* (E *still*) ‘still’ (Jeremiah 1976, p. 207)
1840 *'tones* (E *stones*) ‘stones’ (Baker 1999, p. 318)
1850 *'top* (E *stop*) ‘to stop’ (Parkvall and Edlund 1998)

Appendix 7: Early Jamaican

/spr/
1844 *prinkle* (E sprinkle) ‘sprinkle’ (D’Costa and Lalla 1989, p. 93)

/str/
1834 *'trong* (E *strong*) ‘strong’ (D’Costa and Lalla 1989, p. 72)
1837 *treat* (E *straight*) ‘straight’ (Cassidy 1961, p. 37)
1830s *'trong* (E *strong*) ‘strong’ (D’Costa and Lalla 1989, p. 121)
1830s *'trange* (E *strange*) ‘strange’ (D’Costa and Lalla 1989, p. 122)
1843 *trength* (E *strength*) ‘strength’ (D’Costa and Lalla 1989, p. 64)
1868 *trap* (E *strap*) ‘strap’ (Russell 1868)
1877 *trike* (E *strike*) ‘to strike’ (Cassidy and Le Page 1967a, p. 426)
1877 *triker* (E *striker*) ‘harpoon’ (Cassidy and Le Page 1967a, p. 426)

/skr/
1833 *cratch* (E *scratch*) 'to scratch' (Cassidy and Le Page 1967a, p. 128)

/sp/
1831 *'peak* (E *speak*) 'to speak' (D'Costa and Lalla 1989, p. 59)
1830s *'peck* (E *speck*) 'speck' (D'Costa and Lalla 1989, p. 120)
1830s *poil* (E *spoil*) 'to spoil' (D'Costa and Lalla 1989, p. 117)
1830s *'pose* (E *suppose*) 'to suppose' (D'Costa and Lalla 1989, p. 121)
1843 *peak* (E *speak*) 'to speak' (D'Costa and Lalla 1989, p. 63)
1843 *pose* (E *suppose*) 'to suppose' (D'Costa and Lalla 1989, p. 63)
1843 *posin* (E *supposing*) 'supposing' (D'Costa and Lalla 1989, p. 63)
1844 *perit* (E *spirit*) 'spirit' (D'Costa and Lalla 1989, p. 94)
1844 *poil* (E *spoil*) 'to spoil' (D'Costa and Lalla 1989, p. 102)
1844 *'py glass* (E *spy glass*) 'spy-glass' (D'Costa and Lalla 1989, p. 111)
1859 *pirit* (E *spirit*) 'spirit' (D'Costa and Lalla 1989, p. 93)
1868 *pangshalla* (E *Spanish elm*) 'Spanish elm' (Russell 1868)
1868 *peckle* (E *speckled*) 'speckled' (Russell 1868)

/st/
1790 *'tand* (E *stand*) 'to be' (Cassidy and Le Page 1967a, p. 422)
1803 *top* (E *stop*) 'to stay' (D'Costa and Lalla 1989, p. 17)
1808 *tick* (E *stick*) 'stick' (D'Costa and Lalla 1989, p. 27)
1823 *tick out* (E *stick out*) 'to stick out' (D'Costa and Lalla 1989, p. 39)
1831 *tand* (E *stand*) 'to stand' (D'Costa and Lalla 1989, p. 60)
1831 *'tay* (E *stay*) 'to stay' (D'Costa and Lalla 1989, p. 59)
1831 *tay* (E *stay*) 'to stay' (D'Costa and Lalla 1989, p. 59)
1831 *teal* (E *steal*) 'to steal' (D'Costa and Lalla 1989, p. 59)
1833 *top* (E *stop*) 'to stop' (D'Costa and Lalla 1989, p. 52)
1833 *tay* (E *stay*) 'to stay' (Cassidy 1961, p. 108)
1837 *tap* (E *stop*) 'to stop' (Cassidy 1961, p. 37)
1837 *tocks* (E *stocks*) 'stocks' (Cassidy 1961, p. 37)
1837 *'tomach* (E *stomach*) 'stomach' (D'Costa and Lalla 1989, p. 81)
1830s *tab* (E *stab*) 'to stab' (D'Costa and Lalla 1989, p. 120)
1830s *tand* (E *stand*) 'to stand' (D'Costa and Lalla 1989, p. 114)
1830s *'tart off* (E *start off*) 'to start off' (D'Costa and Lalla 1989, p. 121)
1830s *tummick* (E *stomach*) 'stomach' (D'Costa and Lalla 1989, p. 120)
1830s *'top* (E *stop*) 'to stop' (D'Costa and Lalla 1989, p. 121)
1830s *tuddy* (E *study*) 'study' (D'Costa and Lalla 1989, p. 113)
1830s *tuff* (E *stuff*) 'mattress' (D'Costa and Lalla 1989, p. 120)
1843 *tick* (E *stick*) 'to stick' (D'Costa and Lalla 1989, p. 64)
1844 *tan* (E *stand*) 'to stand' (D'Costa and Lalla 1989, p. 98)
1844 *'tar* (E *star*) 'star' (D'Costa and Lalla 1989, p. 106)
1844 *'tep* (E *step*) 'to step' (D'Costa and Lalla 1989, p. 93)
1844 *tingree* (E *sting ray*) 'sting-ray fish' (D'Costa and Lalla 1989, p. 99)
1844 *tink* (E *stink*) 'to stink' (D'Costa and Lalla 1989, p. 103)
1844 *tocks* (E *stocks*) 'stocks' (D'Costa and Lalla 1989, p. 102)

1844 *tomach* (E *stomach*) 'stomach' (D'Costa and Lalla 1989, p. 109)
1844 *top* (E *stop*) 'to stop' (D'Costa and Lalla 1989, p. 107)
1844 *tory* (E *story*) 'story' (D'Costa and Lalla 1989, p. 91)
1844 *'tory* (E *story*) 'story' (D'Costa and Lalla 1989, p. 99)
1868 *'talin* (E *sterling*) 'sterling' (Russell 1868)
1868 *ticks* (E *stick*) 'stick' (Russell 1868)
1868 *ticky* (E *sticky*) 'sticky' (Russell 1868)
1868 *ticky-ticky* (E *sticky*) 'ruinate' (Russell 1868)
1868 *rocka-tone* (E *rock, stone*) 'stone' (Russell 1868)
1868 *tout* (E *stout*) 'stout' (Russell 1868)
1873 *'tan* (E *stand*) 'to be' (D'Costa and Lalla 1989, p. 127)
1873 *'tupid* (E *stupid*) 'stupid' (D'Costa and Lalla 1989, p. 125)
1877 *tan* (E *stand*) 'to seem to be' (Cassidy and Le Page 1967a, p. 422)

/sk/
1790 *corpion* (E *scorpion*) 'scorpion' (Cassidy 1961, p. 37)
1823 *'kin* (E *skin*) 'skin' (D'Costa and Lalla 1989, p. 39)
1835 *kin* (E *skin*) 'body' (Cassidy and Le Page 1967a, p. 260)
1863 *coolmassa* (E *schoolmaster*) 'schoolmaster' (Cassidy and LePage 1967a, p. 395)
1868 *cool-childrans* (E *school children*) 'school children' (Russell 1868)
1868 *ky* (E *sky*) 'sky' (Russell 1868)
1877 *coo'-massa* (E *schoolmaster*) 'schoolmaster' (Cassidy and Le Page 1967a, p. 395)

Appendix 8: Special case 1: Saramaccan

Early Saramaccan
/spl/
1779 *plitti* (E *split*) 'to scratch' (Arends and Perl 1995, p. 337)

/str/
1779 *tranga* (E *strong*) 'strong, strength' (Arends and Perl 1995, p. 360)
1791 *tranga* (E *strong*) 'strength' (Arends and Perl 1995, p. 383)

/skr/
1779 *krashi* (E *scratch*) 'to itch' (Arends and Perl 1995, p. 307)
1779 *krashikrashi* (E *scratch*) 'rash' (Arends and Perl 1995, p. 308)

/skw/
1778 *kwêli* (E *square*) 'square' (Smith 1987, p. 277)
1778 *kwêri* (E *square*) 'square' (Smith 1987, p. 277)
1779 *kunji* (E *squeeze*) 'to squeeze' (Arends and Perl 1995, p. 311)
1779 *kweli* (E *square*) 'to hew, to carve' (Arends and Perl 1995, p. 312)
1779 *kweri* (E *square*) 'to hew, to carve' (Arends and Perl 1995, p. 312)

Exceptions: reflexes of Dutch etyma
1778 *skrifi* (D *schrijven*) 'to write' (Aceto 1996, p. 37)
1779 *skrifiman* (D *schrijven* + - *man*) 'writer' (Aceto 1996, p. 37)
1779 *skrifi* (D *schrijven*) 'to write' (Arends and Perl 1995, p. 348)
1779 *skrifiman* (D *schrijven* + *-man*) 'writer' (Arends and Perl 1995, p. 348)
1779 *skroef* (D *schroef*) 'screw' (Arends and Perl 1995, p. 348)
1790 *schriffi* (D *schrijven*) 'to write' (Arends and Perl 1995, p. 386)

Exceptions: reflexes of English etyma
1778 *poli* (E *spoil*) 'to spoil' (Smith 1987, p. 452)
1779 *pikki* (E *speak*) 'answer, to answer' (Arends and Perl 1995, p. 335)
1779 *poli* (E *spoil*) 'to spoil' (Arends and Perl 1995, p. 338)

Exceptions: reflexes of English etyma
1779 *stoon* (E *stoon*) 'stone' (Arends and Perl 1995, p. 351)
1779 *stoonman* (E *stone*, *man*) 'bricklayer' (Arends and Perl 1995, p. 351)

Reflexes of /st/
1778 *tann* (E *stand*) 'to stand' (Smith 1987, p. 216)
1778 *tingi* (E *stink*) 'to stink' (Smith 1987, p. 277)
1778 *tíri* (E *steel*) 'still'[1] (Smith 1987, p. 329)
1779 *tann* (E *stand*) 'to wait, to stand still, to stay' (Arends and Perl 1995, p. 354)
1779 *tingi* (E *stink*) 'to stink' (Arends and Perl 1995, p. 358)
1779 *tingimeti* (E *stink*, *meat*) 'carcass' (Arends and Perl 1995, p. 358)
1779 *tîri* (E *steer*) 'to steer' (Arends and Perl 1995, p. 358)
1779 *tìriman* (E *steer*, *man*) 'helmsman' (Arends and Perl 1995, p. 358)
1779 *tumpi* (E *stump*) 'stump of a tree' (Arends and Perl 1995, p. 362)
1790 *tori* (E *story*) 'story' (Arends and Perl 1995, p. 386)
1791 *tieri* (E *steer*) 'to steer' (Arends and Perl 1995, p. 383)
1791 *tori* (E *story*) 'story' (Arends and Perl 1995, p. 385)

Exceptions: reflexes of English, Dutch and Portuguese etyma
1779 *skîn* (E *skin*) 'body' (Arends and Perl 1995, p. 348)
1778 *skôp* (D *schoop*) 'shovel' (Aceto 1996, p. 37)
1778 *skopo* (D *schoppen*) 'to kick' (Aceto 1996, p. 37)
1779 *skada* (P *escada*) 'step; ladder' (Arends and Perl 1995, p. 346)
1779 *skoop* (D *schoop*) 'step; ladder' (Arends and Perl 1995, p. 348)
1779 *skopo* (D *schoppen*) 'to kick' (Arends and Perl 1995, p. 348)

Reflexes of /s/ + sonorant clusters
/sm/
1778 *smêri* (E *smell*) 'to smell' (Smith 1987, p. 329)
1778 *smoko* (E *smoke*) 'smoke' (Aceto 1996, p. 32)
1779 *smâla* (D *small*) 'narrow; thin' (Arends and Perl 1995, p. 348)
1779 *smeri* (E *smell*) '(to) smell' (Arends and Perl 1995, p. 348)

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[1] Glossed 'steel' in Smith (1987, p. 329).

1779 *smoko* (E *smoke*) '(to) smoke' (Arends and Perl 1995, p. 348)

/sn/
1779 *sneki* (E *snake*) 'snake' (Arends and Perl 1995, p. 348)

/sr/ (as a result of metathesis)
1778 *srepi* (E *self*) 'self' (Sebba 1982, p. 32)
1779 *srabbo* (E *sharp*) 'sharp' (Arends and Perl 1995, p. 351)

/sw/
1778 *sweri* (E *sweli*) 'to swell' (Smith 1987, p. 292)
1779 *sum* (E *swim*) 'to swim' (Arends and Perl 1995, p. 352)
1779 *sweli* (E *swell*; *swear*) 'to swell; to swear' (Arends and Perl 1995, p. 352)
1779 *sweri* (E *swell*; *swear*) 'to swell; to swear' (Arends and Perl 1995, p. 352)
1779 *swütti* (E *sweet*) 'sweet, pleasant' (Arends and Perl 1995, p. 352)
1791 *swutti* (E *sweet*) 'sweet' (Arends and Perl 1995, p. 383)

Modern Saramaccan

/skr/
sikífi (D *schrijven*) 'to write' (Aceto 1996, p. 37)
sukúfu (D *schroef*) 'screw' (Aceto 1996, p. 37)

/skw/
kpíngi (E *square*) 'squeeze' (Smith 1987, p. 237)
kpíndji (E *square*) 'squeeze' (Smith 1987, p. 237)
kpínji (E *square*) 'squeeze' (Smith 1987, p. 229)
kwíndji (E *square*) 'squeeze' (Smith 1987, p. 237)

/sp/
pói (E *spoil*) 'to spoil' (Smith 1987, p. 229)
póli (E *spoil*) 'to spoil' (Smith 1987, p. 229)

/st/
tán (E *stand*) 'to stand' (Smith 1987, p. 229)
tíi (E *steel*) 'steel' (Smith 1987, p. 229)
tíngi (E *stink*) 'to stink' (Smith 1987, p. 229)
sitónu (E *stone*) 'stone' (Sebba 1982, p. 25)
sitón (E *stone*) 'stone' (Smith 1987, p. 229)
tóli (E *story*) 'story' (Smith 1987, p. 229)

/sk/
sikɔɔ (E *school*) 'school' (Hancock 1971, p. 117)
sikópu (D *schop*) 'shovel' (Aceto 1996, p. 37)

/sw/
sói (E *swear*) 'to swear' (Smith 1987, p. 232)
soópu (E *swell up*) 'to swell up' (Smith 1987, p. 293)
sɔɔmpu (E *swamp*) 'swamp' (Smith 1987, p. 293)
súti (E *sweet*) 'sweet' (Smith 1987, p. 293)

Appendix 9: Special case 2: Ndyuka

/skr/
keébi (E *scrape*) 'to scrape' (Smith 1987, p. 229)
kwínsi (E *squeeze*) 'to squeeze' (Smith 1987, p. 229)

/str/
sitaati (D *straat*) 'street' (Huttar and Huttar 1994, p. 434)
[sitee] (D *strijden*) 'to fight' (Huttar and Huttar 1994, p. 555)

/st/
sitáli (E *star*) 'star' (Smith 1987, p. 229)
taampu (E *stand up*) 'to be in standing position' (Huttar and Huttar 1994, p. 623)
tán (E *stand*) 'to stand' (Smith 1987, p. 229)
tápu (E *stop*) 'to stop' (Smith 1987, p. 229)
tingi (E *stink*) 'to smell' (Huttar and Huttar 1994, p. 623)
tóli (E *story*) 'story' (Smith 1987, p. 229)

/sw/
soópu (E *swell up*) 'to swell up' (Smith 1987, p. 293)
suti (E *sweet*) 'sweet' (Huttar and Huttar 1994, p. 593)
soópu (E *swell up*) 'to swell up' (Smith 1987, p. 293)
sweli (E *swell*) 'to swell' (Huttar and Huttar 1994, p. 623)
sweti (E *sweat*) 'sweat' (Huttar and Huttar 1994, p. 610)

Appendix 10: Modern Krio

/str/
trap (E *strap*) 'to flog with strap' (Fyle and Jones 1980, p. 374)
trapin (E *strapping*) 'severe flogging' (Fyle and Jones 1980, p. 374)
trenja (E *strager*) 'visitor, guest; stranger' (Fyle and Jones 1980, p. 375)
trɛnk (E *strength*) 'strength' (Jones 1971, p. 70)
tret (E *stretch*) 'to stretch out, stretch oneself' (Fyle and Jones 1980, p. 375)
tret (E *straight*) 'straight; directl(ly); trustworthy' (Fyle and Jones 1980, p. 375)
tretin (E *straighten*) 'to straighten' (Fyle and Jones 1980, p. 375)
trip (E *strip*) 'to strip' (Fyle and Jones 1980, p. 377)
trit (E *street*) 'street, road, path' (Fyle and Jones 1980, p. 377)
trɔŋ(ga) (E *strong*) 'strong' (Smith 1987, p. 229)

trɔng (E *strong*) 'strong' (Fyle and Jones 1980, p. 377)

/skr/
krep (E *scrape*) 'to scrape' (Fyle and Jones 1980, p. 202)
krɔb (E *scrub*) 'to scrub; scrubbing' (Fyle and Jones 1980, p. 206)

/sp/
pun (E *spoon*) 'spoon' (Berry 1961, p. 5)
pun (E *spoon*) 'spoon' (Fyle and Jones 1980, p. 305)
pwɛl (E *spoi*) 'to spoil' (Smith 1987, p. 229)
pwɔjl (E *spoil*) 'to spoil' (Smith 1987, p. 229)

/st/
tangens (E *stand against*) 'to engage in low level job' (Fyle and Jones 1980, p. 359)
tap (E *stop*) 'to stop, rest, stay (at), reside (at)' (Fyle and Jones 1980, p. 359)
tat (E *start*) 'to cause to run away suddenly' (Fyle and Jones 1980, p. 360)
te (E *stay*) 'to stay' (Jones 1971, p. 70)
tik (E *stick*) 'stick; twig, (branch of) tree' (Fyle and Jones 1980, p. 368)
tikbed (E *stick bed*) 'wooden bed' (Fyle and Jones 1980, p. 368)
tikfɛnch (E *stick fence*) 'fence of wooden poles' (Fyle and Jones 1980, p. 368)
tiki (E *stick*) 'stick' (Smith 1987, p. 229)
tik-kom (E *stick comb*) 'wooden comb' (Fyle and Jones 1980, p. 369)
tikpun (E *stick spoon*) 'wooden spoon' (Fyle and Jones 1980, p. 368)
tinap (E *stand up*) 'to stand, stand up' (Fyle and Jones 1980, p. 369)
tomok (E *stomach*) 'stomach, belly; chest' (Fyle and Jones 1980, p. 370)
ton (E *stone*) 'stone; testicle, penis' (Fyle and Jones 1980, p. 370)
tori (E *stori*) 'story' (Fyle and Jones 1980, p. 370)
tɔf (E *stuff*) 'pus' (Fyle and Jones 1980, p. 371)
tɔmtik (E *stump stick*) 'stump of tree' (Fyle and Jones 1980, p. 372)

Appendix 11: Modern Broad Cameroon Pidgin English

/str/
/trénja/ (E *stranger*) 'stranger' (Schneider 1966, p. 23)
/tróng/ (E *strong*) 'strong' (Schneider 1966, p. 23)
trong-hét (E *strong head*) 'stubborn' (Schneider 1966, p. 171)
trong-mόf (E *strong mouth*) 'boastfulness' (Schneider 1966, p. 171)
tróng-tróng (E *strong*) 'desperately' (Schneider 1966, p. 171)

/sp/
/sìpíà/ (E *spear*) 'spear' (Schneider 1966, p. 23)
sipírit (E *spirit*) 'spirit' (Schneider 1966, p. 168)
sipól (E *spoil*) 'to spoil' (Schneider 1966, p. 1966)

/st/
/sìtík/ (E *stick*) 'stick, tree' (Schneider 1966, p. 23)
sitó (E *store*) 'store' (Schneider 1966, p. 168)
sitóp (E *stop*) 'to wait, stop' (Schneider 1966, p. 168)
sitówn (E *stone*) 'rock' (Schneider 1966, p. 168)

/sm/
/siméI/ (E *smell*) 'scent, odour' (Schneider 1966, p. 23)
simól-boi (E *small boy*) 'subordinate' (Schneider 1966, p. 168)
simól-tam (E *small time*) 'soon, soon after' (Schneider 1966, p. 168)

/sl/
/sìlíp/ (E *sleep*) 'to sleep' (Schneider 1966, p. 23)

Exceptions
tanop (E *stand up*) 'to stand' (Schneider 1966, p. 219)
torí (E *story*) 'story, tale' (Schneider 1966, p. 170)

/sw/
shwán (E *swine*) 'swine' (Schneider 1966, p. 23)
shwít (E *sweet*) 'sweet' (Schneider 1966, p. 23)

Appendix 12: Modern Kamtok

/str/
tret (E *straight*) 'straight' (Todd 1979b, p. 27)
trohng (E *strong*) 'strong' (Todd 1979b, p. 27)
trohnghed (E *strong head*) 'stubbornness' (Todd 1979b, p. 66)

/st/
tanap (E *stand up*) 'to stand' (Todd 1979b, p. 41)

Appendix 13: Modern Cameroonian

/sp/
sipún (E *spoon*) 'spoon' (Smith 1987, p. 229)

/st/
sitík (E *stick*) 'stick' (Smith 1987, p. 229)
sitón (E *stone*) 'stone' (Smith 1987, p. 229)
sitɔp (E *stop*) 'to stop' (Smith 1987, p. 229)
tandà (E *stand*) 'to stand' (Smith 1987, p. 229)
tɔri (E *story*) 'story' (Smith 1987, p. 229)

Appendix 14: Modern Jamaican

/spl/
plik (E *split*) 'to split' (Johnson 1974, p. 120)

/spr/
/pred op/ (E *spread, up*) 'to spread' (Le Page and De Camp 1960, p. 158)
pringa (E *spring*) 'trap with a spring' (Cassidy and Le Page 1967a, p. 364)

/str/
/traaŋ/ (E *strong*) 'strong' (Le Page and De Camp 1960, p. 161)
/traaŋa/ (E *strong*) 'strong' (Le Page and De Camp 1960, p. 165)
'train (E *strain*) 'to strain' (Cassidy 1961, p. 124)
traŋ (E *strong*) 'strong' (Smith 1987, p. 229)
trang (E *strong*) 'strong' (Sutcliffe 1982, p. 108)
trangbak (E *strong back*) 'a medicine' (Cassidy and Le Page 1967a, p. 427)
trawn (E *strand*) 'strand' (Cassidy and Le Page 1967a, p. 450)
/trech/ (E *stretch*) 'to stretch' (Le Page and De Camp 1960, p. 154)
tretchal (E *stretcher*) 'top of a door frame' (Cassidy and Le Page 1967a, p. 450)
/triet/ (E *straight*) 'straight' (Le Page and De Camp 1960, p. 177)
trip (E *strip*) 'aloes' (Cassidy 1961, p. 37)

/skr/
craps (E *scraps*) 'scrap' (Cassidy and Le Page 1967a, p. 128)
crunge (E *scrunge*) 'to crush, to squeeze' (Cassidy and Le Page 1967a, p. 133)
kráani (E *scrawny*) 'lean' (Cassidy and Le Page 1967, p. 128)
kraap (E *scrape*) 'scrape' (Cassidy 1961, p. 45)
krach (E *scratch*) 'to scratch' (Cassidy and Le Page 1967a, p. 128)
kráfilos (E *scrofulous*) 'skin disease' (Cassidy and Le Page 1967a, p. 410)
kratš (E *scratch*) 'to scratch' (Smith 1987, p. 229)
kriep (E *scrape*) 'to scrape' (Cassidy 1961, p. 45)
krof (E *scruff*) 'mean, worthless; wastrel' (Cassidy and Le Page 1967a, p. 133)
krofi (E *scruffy*) 'rough' (Cassidy and Le Page 1967a, p. 265)

/skw/
queeze (E *squeeze*) 'to squeeze' (Cassidy 1961, p. 37)
quint (E *squint*) 'to squint' (Cassidy 1961, p. 37)

/sp/
/pan/ (E *span*) 'to lash with a whip' (Le Page and De Camp 1960, p. 168)
pawn (E *spawn*) 'spawn' (Cassidy 1961, p. 37)
peckle (E *speckle*) 'speckle' (Cassidy 1967a, p. 37)
pider (E *spider*) 'spider' (Cassidy 1967a, p. 37)
posen (E *supposing*) 'supposing' (Cassidy 1961, 220)
púun (E *spoon*) 'spoon' (Cassidy and Le Page 1967a, p. 335)
pwail (E *spoil*) 'to spoil' (Cassidy 1961, p. 35)

/st/
tagalang (E *stagger along*) 'to stagger along' (Cassidy and Le Page 1967a, p. 434)
táka (E *stand like*) 'as if' (Cassidy and Le Page 1967a, p. 434)
takíed (E *stockade*) 'fence' (Cassidy and Le Page 1967a, p. 436)
tàmpanggúo (E *stamp and go*) 'codfish fritter' (Cassidy and Le Page 1967a, p. 422)
/tan/ (E *stand*) 'to stand' (Le Page and De Camp 1960, p. 145)
tanchiin (E *stanchion*) 'stand' (Cassidy and Le Page 1967a, p. 437)
tánka (E *stand like*) 'as if' (Cassidy and Le Page 1967a, p. 436)
[tap] (E *stop*) 'to stop' (Akers 1981, p. 31)
tep (E *step*) 'step' (Sutcliffe 1982, p. 108)
tíima-bràn (E *Steamer Brand*) 'a cutlass' (Cassidy and Le Page 1967a, p. 423)
/tik/ (E *stick*) 'to stick' (Le Page and Cassidy 1960, p. 178)
tik-tik (E *stick*) 'stick' (Cassidy and Le Page 1967a, p. 444)
tiki-tiki (E *stick*) 'stick' (Cassidy and Le Page 1967a, p. 444)
[tiŋ] (E *stink*) 'to stink' (Akers 1981, p. 31)
tinggri (E *sting-ray*) 'sting-ray' (Cassidy and Le Page 1967a, p. 445)
/todi/ (E *studdie, study*) 'steady' (Le Page and De Camp 1960, p. 154)
tokit (E *stock*) 'trunk, stem of a tree' (Cassidy and Le Page 1967a, p. 447)
[tomok] (E *stomach*) 'stomach' (Akers 1981, p. 31)
tompa (E *stump*) 'stump' (Cassidy and LePage 1967a, p. 453)
[to:ri] (E *story*) 'story' (Akers 1981, p. 31)
'toop (E *stoop*) 'to stoop' (Cassidy 1961, 381)
tuff (E *stuff*) 'mattress' (Cassidy 1967a, p. 37)
tumpy (E *stumpy*) 'thumb' (Cassidy 1961, p. 138)
tuon (E *stone*) 'stone' (Smith 1987, p. 229)
/tuori/ (E *story*) 'story' (Le Page and De Camp 1960, p. 150)

/sk/
kyaaf (E *scaffold*) 'platform' (Cassidy and Le Page 1967a, p. 268)
kyat (E *scat*) 'make somebody go' (Cassidy and Le Page 1967a, p. 268)
/kyata/ (E *scatter*) 'to scatter' (Le Page and De Camp 1960, p. 148)
corpion (E *scorpion*) 'scorpion' (Cassidy 1967a, p. 37)
/kab/ (E *scabs*) 'scabs' (Le Page and De Camp 1960, p. 158)
/kin/ (E *skin*) 'skin' (Le Page and De Camp 1960, p. 173)

/sm/
simit (E *smith*) 'smith' (Cassidy and Le Page 1967b, p. lxii)
sumáal (E *small*) 'small' (Cassidy 1961, p. 38)
sumúud (E *smooth*) 'smooth' (Cassidy 1961, p. 38)

/sn/
siníek (E *snake*) 'snake' (Cassidy 1961, p. 38)
sunúk (E *snook*) 'snook' (Cassidy 1961, p. 38)

Appendix 15: Early Tok Pisin

/str/
sitiret (E *straight*) 'straight' (Mühlhäusler 1997, p. 165)
sitirong (E *strong*) 'strong' (Mühlhäusler 1997, p. 133)
1943 *sitretim* (E *straight*) 'to correct' (Murphy 1966, p. 117)
1943 *sitrong* (E *strong*) 'determined, strong-willed' (Murphy 1966, p. 94)
1943 *sitrongpela* (E *strong fellow*) 'sturdy, strong, powerful' (Murphy 1966, p. 94)

/skr/
1943 *sikarapim* (E *scrape*) 'to grate, chop up; to scratch' (Murphy 1966, p. 93)

/sp/
1943 *sipia* (E *spear*) 'arrow, spear' (Murphy 1966, p. 93)
1943 *sipun* (E *spoon*) 'spoon' (Murphy 1966, p. 94)

/st/
situa (E *store*) 'store' (Mühlhäusler 1997, p. 133)
1943 *sita* (E *star*) 'star' (Murphy 1966, p. 154)
1943 *sitas* (E *starch*) 'starch' (Murphy 1966, p. 154)
1943 *sitima* (E *steamer*) 'steamship' (Murphy 1966, p. 94)
1943 *siton* (E *stone*) 'stone' (Murphy 1966, p. 111)

/sl/
1943 *silekim* (E *slack*) 'to make slack' (Murphy 1966, p. 95)

Appendix 16: Early Bislama

/st/
-1899 *sitima* (E *steamer*) 'steamship' (Crowley 1998, p. 98)
1931 *sitone* (E *stone*) 'stone, rock' (Crowley 1998, p. 98)

/sk/
-1899 *sikinim* (E *skin*) 'to peel' (Crowley 1998, p. 96)

/sl/
1929 *slakim* (G *schlagen*) 'to strike' (Crowley 1998, p. 97)

/sw/
-1919 *swet* (E *sweat*) 'to sweat' (Crowley 1998, p. 99)
1937 *swim* (E *swim*) 'to swim' (Crowley 1998, p. 99)

Appendix 17: Modern Tok Pisin

/skr/
síkiřap (E *scrape*) 'scrape, to scratch, scrape' (Pawley 1975, p. 220)
sikráp (E *scrape*) 'scraper, to scratch, scrape' (Pawley 1975, p. 223)
síkurú: (E *screw*) 'screw, joint' (Pawley 1975, p. 220)
sukrú (E *screw*) 'screw, joint' (Pawley 1975, p. 220)
sukurú: (E *screw*) 'screw, joint' (Pawley 1975, p. 220)

/sp/
sipířit (E *spirit*) 'spirit' (Pawley 1975, p. 220)
sipún (E *spoon*) 'spoon' (Pawley 1975, p. 220)

/st/
sitón (E *stone*) 'stone' (Pawley 1975, p. 220)

The treatment of obstruent + sonorant onset clusters

Appendix 1: Reflexes of obstruent + glide onset clusters in early Sranan and early Saramaccan

Early Sranan
/kw/
-1765- *kwiensie* (E *squeeze*) 'to squeeze' (Smith, p. 236)
1783 *kwetikweti* (E *quite*) 'very much' (Bruyn 1995, p. 154)

Early Saramaccan
/kw/
1779 *kweli* (E *square*) 'to hew; to carve' (Arends and Perl 1995, p. 312)
1790 *gweette* (E *quite*) 'at all' (Arends and Perl 1995, p. 384)

Appendix 2: Herlein (1718)

/pl/
1718 *ples* (E *please*) 'to please' (Arends and Perl 1995, p. 74)
1718 *plesje* (E *place*) 'place? (Arends and Perl 1995, p. 74)
1718 *plesse* (E *place*) 'place? (Arends and Perl 1995, p. 74)

/dr/
1718 *drinkje* (E *drink*) 'to drink' (Arends and Perl 1995, p. 73)
1718 *druije* (D *druiven*) 'grapes' (Arends and Perl 1995, p. 73)

Appendix 3: Court records (1707–1777)

/tr/
1745 *contriman* (E *countryman*) 'countryman' (van den Berg 2000, p. 90)
1747 *keentrass* (E *cane*, D *tras*) 'sugar cane leaves' (van den Berg 2000, p. 94)
1747 *cattentrie* (E *cotton-tree*) 'cotton-tree' (van den Berg 2000, p. 94)
1747 *cattentries* (E *cotton-tree*) 'cotton-tree' (van den Berg 2000, p. 94)
1752 *kattentrie* (E *cotton-tree*) 'cotton-tree' (van den Berg 2000, p. 95)
1752 *kattentries* (E *cotton-tree*) 'cotton-tree' (van den Berg 2000, p. 95)
1761 *contre* (E *country*) 'country' (van den Berg 2000, p. 101)
1762 *tras* (D *tras*) 'sugar cane' (van den Berg 2000, p. 103)
1763 *contries* (E *country*) 'country' (van den Berg 2000, p. 104)

/dr/
1723 *dram* (E *dram*) 'strong liquor' (van den Berg 2000, p. 86)
1732 *dram* (E *dram*) 'strong liquor' (van den Berg 2000, p. 87)

1735 *dram* (E *dram*) 'strong liquor' (van den Berg 2000, p. 88)
1737 *dram* (E *dram*) 'strong liquor' (van den Berg 2000, p. 88)
1742 *dram* (E *dram*) 'strong liquor' (van den Berg 2000, p. 89)
1743 *dram* (E *dram*) 'strong liquor' (van den Berg 2000, p. 90)
1744 *dram* (E *dram*) 'strong liquor' (van den Berg 2000, p. 90)
1747 *dram* (E *dram*) 'strong liquor' (van den Berg 2000, p. 94)
1759 *dram* (E *dram*) 'strong liquor' (van den Berg 2000, p. 97)
1763 *dressie* (E *dress*) 'to cure' (van den Berg 2000, p. 103)
1767 *dram* (E *dram*) 'strong liquor' (van den Berg 2000, p. 105)

/kl/
1732 *kloosie* (E *clothes*) 'clothes; cloth' (van den Berg 2000, p. 87)
1766 *klossie* (E *cloth*) 'cloth' (van den Berg 2000, p. 105)

/kr/
1745 *kras kras* (E *scratch*) 'rash' (van den Berg 2000, p. 91)
1761 *-creeq* (E *creek*) 'creek' (van den Berg 2000, p. 101)
1762 *crabbe-* (E *crab*) 'crab' (van den Berg 2000, p. 101)
1762 *-kriekje* (E *creek*) 'creek' (van den Berg 2000, p. 103)
1762 *-creeq* (E *creek*) 'creek' (van den Berg 2000, p. 103)
1769 *krabbe-* (E *crab*) 'crab' (van den Berg 2000, p. 106)
1777 *–creeq* (E *creek*) 'creek' (van den Berg 2000, p. 106)

/gr/
1752 *granman* (P *grão*, *man*) 'chief' (van den Berg 2000, p. 94)
1761 *grond* (E *ground*) 'ground' (van den Berg 2000, p. 101)
1762 *mangro* (E *mangrove*) 'mangrove' (van den Berg 2000, p. 86)
1763 *gran* (P *grão*) 'big' (van den Berg 2000, p. 105)
1763 *grand* (P *grão*) 'big' (van den Berg 2000, p. 105)
1763 *mangro* (E *mangrove*) 'mangrove' (van den Berg 2000, p. 105)
1766 *grand* (P *grande*) 'nig' (van den Berg 2000, p. 83)

New clusters
/kr/
1759 *kokrom* (E *cook*, *room*) 'kitchen' (van den Berg 2000, p. 98)
1761 *soekre* (D *suiker*) 'sugar' (van den Berg 2000, p. 81)
1762 *bakkra* (Efik[1] *mbakara*) 'White' (van den Berg 2000, p. 82)
1763 *bakkra* (Efik *mbakara*) 'White' (van den Berg 2000, p. 82)

/gr/
1757 *ningre* (D *neger*) 'Negro' (van den Berg 2000, p. 80)
1761 *masseranegre* (E *master*, D *neger*) 'fellow-slave' (van den Berg 2000, p. 81)
1762 *ningre* (D *neger*) 'Negro' (van den Berg 2000, p. 82)
1766 *negre* (D *neger*) 'Negro' (van den Berg 2000, p. 83)

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[1] Also known as Ibibio.

Appendix 4: van Dyk (ca. 1765)

/pl/

-1765- *pletti* (E *plate*) 'plate' (Arends and Perl 1995, p. 113)
-1765- *plysieri* (D *plezier*) 'pleased' (Arends and Perl 1995, p. 224)
-1765- *plysiri* (D *plezier*) 'pleased' (Arends and Perl 1995, p. 217)
-1765- *plyziere* (D *plezier*) 'pleased' (Arends and Perl 1995, p. 142)
-1765- *plyziri* (D *plezier*) 'pleased' (Arends and Perl 1995, p. 144)
-1765- *pranasi* (D *plantage*) 'plantation' (Arends and Perl 1995, p. 175)
-1765- *pranasie* (D *plantage*) 'plantation' (Arends and Perl 1995, p. 141)
-1765- *pre* (E *play*) 'to play' (Arends and Perl 1995, p. 127)
-1765- *pree* (E *play*) 'to play' (Arends and Perl 1995, p. 127)
-1765- *pruiki* (D *pruik*) 'wig' (Arends and Perl 1995, p. 162)

/bl/

-1765- *blakke* (E *black*) 'black' (Arends and Perl 1995, p. 113)
-1765- *bley* (D *blij*) 'pleased' (Arends and Perl 1995, p. 132)
-1765- *bloe* (E *blow*) 'to blow' (Arends and Perl 1995, p. 110)
-1765- *bloede*[2] (D *bloed*) 'blood' (Arends and Perl 1995, p. 109)
-1765- *bloedi* (D *bloed*) 'blood' (Arends and Perl 1995, p. 156)

/br/

-1765- *brake* (E *broke*) 'to break' (Arends and Perl 1995, p. 166)
-1765- *brara* (E *brother*) 'brother' (Arends and Perl 1995, p. 105)
-1765- *breddi* (E *bread*) 'bread' (Arends and Perl 1995, p. 135)
-1765- *bredi* (E *bread*) 'bread' (Arends and Perl 1995, p. 135)
-1765- *breeki* (E *breakfast*) 'breakfast' (Arends and Perl 1995, p. 125)
-1765- *breki* (E *break-*) 'breakfast' (Arends and Perl 1995, p. 147)
-1765- *briddi* (E *bread*) 'bread' (Arends and Perl 1995, p. 113)
-1765- *briefi* (D *brief*) 'letter' (Arends and Perl 1995, p. 150)
-1765- *brifi* (D *brief*) 'letter (Arends and Perl 1995, p. 147)
-1765- *brocke* (E *broke*) 'to break' (Arends and Perl 1995, p. 181)
-1765- *broek* (D *broek*) 'trousers' (Arends and Perl 1995, p. 110)
-1765- *broke* (E *broke*) 'to break' (Arends and Perl 1995, p. 106)
-1765- *brokke* (E *broke*) 'to break' (Arends and Perl 1995, p. 127)
-1765- *brugge* (D *brug*) 'bridge' (Arends and Perl 1995, p. 105)

/fr/

-1765- *fransze* (D *Frans*) 'French' (Arends and Perl 1995, p. 151)
-1765- *frede* (E *afraid*) 'afraid' (Arends and Perl 1995, p. 222)
-1765- *fredi* (E *afraid*) 'afraid' (Arends and Perl 1995, p. 163)
-1765- *vredi*[3] (E *afraid*) 'afraid' (Arends and Perl 1995, p. 138)
-1765- *vreedi* (E *afraid*) 'afraid' (Arends and Perl 1995, p. 122)

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[2] In accordance with Dutch orthographic conventions, [u] is rendered in several records of early Sranan by the digraph *oe*.
[3] Occasionally, [f] is transcribed with *v*, in accordance with Dutch orthographic conventions.

/tr/
-1765- *straate* (D *straat*) 'street' (Arends and Perl 1995, p. 140)
-1765- *trang hede* (E *strong*, *head*) 'by force' (Arends and Perl 1995, p. 206)
-1765- *trange* (E *strong*) 'strong' (Arends and Perl 1995, p. 127)
-1765- *trangen* (E *strong*) 'strong' (Arends and Perl 1765, p. 99)
-1765- *trobbele* (E *trouble*) 'trouble' (Arends and Perl 1995, p. 121)
-1765- *trobele* (E *trouble*) 'trouble' (Arends and Perl 1995, p. 121)
-1765- *trouw* (D *trouwen*) 'to marry' (Arends and Perl 1995, p. 106)

/dr/
-1765- *drie* (D *drie*) 'three' (Arends and Perl 1995, p. 100)
-1765- *drinki* (E *drink*) 'to drink' (Arends and Perl 1995, p. 203)
-1765- *drom* (E *drum*) 'drum' (Arends and Perl 1995, p. 233)
-1765- *dry* (E *dry*) 'dry' (Arends and Perl 1995, p. 191)

/kl/
-1765- *klari* (D *klaar*) 'ready' (Arends and Perl 1995, p. 133)
-1765- *klosse* (E *clothes*) 'clothes' (Arends and Perl 1995, p. 149)
-1765- *klossi* (E *clothes*) 'clothes' (Arends and Perl 1995, p. 99)
-1765- *klossi by* (E *close by*) 'near' (Arends and Perl 1995, p. 128)
-1765- *krien* (E *clean*) 'clean' (Arends and Perl 1995, p. 154)
-1765- *krìen* (E *clean*) 'clean' (Arends and Perl 1995, p. 134)

/kr/
-1765- *krokete* (E *crooked*) 'left' (Arends and Perl 1995, p. 109)
-1765- *kroekite* (E *crooked*) 'wrong' (Arends and Perl 1995, p. 126)
-1765- *krokte* (E *crooked*) 'left' (Arends and Perl 1995, p. 156)
-1765- *kry* (E *cry*) 'to cry' (Arends and Perl 1995, p. 120)
-1765- *makkreel* (D *makreel*) 'mackerel' (Arends and Perl 1995, p. 114)
-1765- *schribi* (D *scrijven*) 'to write' (Arends and Perl 1995, p. 107)
-1765- *schribi man* (D *schrijven*, E *man*) 'bookkeeper' (Arends and Perl 1995, p. 228)
-1765- *schrifi* (D *schrijven*) 'to write' (Arends and Perl 1995, p. 97)
-1765- *schrifiman* (D *scrijven*, *man*) 'bookkeeper' (Arends and Perl 1995, p. 231)
-1765- *scribi* (D *schrijven*) 'to write' (Arends and Perl 1995, p. 121)

/gr/
-1765- *gran* (P *grão*) 'old' (Arends and Perl 1995, p. 105)
-1765- *granman* (P *grão*, E *man*) 'king' (Arends and Perl 1995, p. 100)
-1765- *gron* (E *ground*) 'earth' (Arends and Perl 1995, p. 103)
-1765- *groy* (D *groeien*) 'to sprout' (Arends and Perl 1995, p. 210)

New clusters
/tr/
-1765- *doctre* (E *doctor*) 'doctor' (Arends and Perl 1995, p. 156)
-1765- *estredé* (E *yesterday*) 'yesterday' (Arends and Perl 1995, p. 150)
-1765- *es trede* (E *yesterday*) 'yesterday' (Arends and Perl 1995, p. 156)

-1765- *estrede* (E *yesterday*) 'yesterday' (Arends and Perl 1995, p. 156)
-1765- *istre dé* (E *yesterday*) 'yesterday' (Arends and Perl 1995, p. 100)
-1765- *istre de* (E *yesterday*) 'yesterday' (Arends and Perl 1995, p. 100)
-1765- *mastra* (E *master*) 'master' (Arends and Perl 1995, p. 138)
-1765- *trom* (E *turn*) 'to become' (Arends and Perl 1995, p. 96)
-1765- *noefetrom* (E *enough, turn*) 'often' (Arends and Perl 1995, p. 98)

/kr/
-1765- *kroeten* (E *court*) 'to quarrel' (Arends and Perl 1995, p. 119)
-1765- *koekroe* (E *cookroom*) 'kitchen' (Arends and Perl 1995, p. 177)
-1765- *koekrom* (E *cookroom*) 'kitchen' (Arends and Perl 1995, p. 165)

Appendix 5: Nepveu (1770)

/pl/
1770 *plesi* (E *place*) 'place' (Arends and Perl 1995, p. 84)
1770 *plesi* (E *place*) 'place' (Arends and Perl 1995, p. 90)
1770 *plessie* (E *please*) 'to please' (Arends and Perl 1995, p. 77)

/dr/
1770 *drei* (E *dry*) 'thirst, drought' (Arends and Perl 1995, p. 89)
1770 *dreij* (E *dry*) 'dry' (Arends and Perl 1995, p. 88)
1770 *dressiman* (E *dress*, E *man*) 'medicine-man' (Arends and Perl 1995, p. 88)
1770 *dri* (D *drie*) 'three' (Arends and Perl 1995, p. 83)
1770 *drinki* (E *drink*) 'to drink' (Arends and Perl 1995, p. 89)

/gr/
1770 *grandi* (P *grande*) 'big' (Arends and Perl 1995, p. 81)
1770 *na grom* (E *ground*) 'downward' (Arends and Perl 1995, p. 78)

New clusters
/br/
1770 *bron* (E *burn*) 'to burn' (Arends and Perl 1995, p. 87)
1770 *membre* (E *remember*) 'to think of' (Arends and Perl 1995, p. 86)
1770 *membri* (E *remember*) 'to think of' (Arends and Perl 1995, p. 86)

/tr/
1770 *fenstre* (D *venster*) 'window' (Arends and Perl 1995, p. 78)
1770 *watra* (E *water*, D *water*) 'water' (Arends and Perl 1995, p. 87)

Appendix 6: Schumann (1781)

/bl/
1781 *brudu* (D *bloed*) 'blood' (Bruyn 1995, p. 221)

/br/
1781 *brassa* (P *abraçar*) 'to embrace' (Bruyn 1995, p. 99)
1781 *brokko* (E *broke*) 'to break' (Bruyn 1995, p. 176)

/tr/
1781 *tranga* (E *strong*) 'strength' (Bruyn 1995, p. 196)
1781 *trappo* (E *trap*) 'trap' (Bruyn 1995, p. 81)

/kl/
1781 *krinkrin* (E *clean*) 'very clean' (Bruyn 1995, p. 239)

New clusters
/br/
1781 *membre* (E *remember*) 'to think' (Bruyn 1995, p. 100)

/dr/
1781 *ondro* (D *onder*) 'under' (Bruyn 1995, p. 246)

Appendix 7: Schumann (1783)

/pl/
1783 *pleti* (E *plate*) 'plate' (Smith 1987, p. 365)
1783 *plîs* (E *please*) 'to please' (Smith 1987, p. 365)
1783 *pre* (E *play*) 'to play' (Smith 1987, p. 365)
1783 *preh* (E *play*) 'to play' (Smith 1987, p. 365)
1783 *prîs* (E *please*) 'to please' (Smith 1987, p. 365)

/bl/
1783 *blessi* (E *bless*) 'to bless' (Smith 1987, p. 365)
1783 *blo* (E *blow*) 'to blow' (Smith 1987, p. 345)
1783 *bro* (E *blow*) 'to blow' (Smith 1987, p. 345)
1783 *brakka* (E *black*) 'black' (Smith 1987, p. 345)
1783 *brudu* (D *bloed*) 'blood' (Smith 1987, p. 370)

/br/
1783 *bradi* (E *broad*) 'wide' (Smith 1987, p. 370)
1783 *brara* (E *brother*) 'brother' (Smith 1987, p. 370)
1783 *breki* (E *break-*) 'breakfast' (Smith 1987, p. 368)

/fl/
1783 *fludu* (D *vloed*) 'flood' (Smith 1987, p. 370)
1783 *fredde* (E *afraid*) 'afraid' (Smith 1987, p. 370)
1783 *frei* (E *fly*) 'to fly' (Smith 1987, p. 365)
1783 *fringi* (E *fling*) 'to throw' (Smith 1987, p. 365)
1783 *frudu* (D *vloed*) 'blood' (Smith 1987, p. 370)

/tr/
1783 *kattantri* (E *cotton*, *tree*) 'the wild cotton tree' (van den Berg 2000, p. 93)
1783 *kondreman* (E *countryman*) 'countryman' (van den Berg 2000, p. 90)
1783 *tri* (E *tree*) 'tree' (Smith 1987, p. 367)
1783 *tru* (E *true*) 'true' (Smith 1987, p. 368)

/dr/
1783 *drem* (E *dream*) 'dream' (Smith 1987, p. 367)
1783 *dressi* (E *dress*) 'medicine' (Smith 1987, p. 368)

/kl/
1783 *klossi* (E *clothes*) 'clothes' (Smith 1987, p. 345)
1783 *krin* (E *clean*) 'clean' (Smith 1987, p. 365)
1783 *krini* (E *clean*) 'clean' (Smith 1987, p. 365)
1783 *krossi* (E *clothes*) 'clothes' (Smith 1987, p. 345)
1783 *krossi-* (E *close*) 'close' (Smith 1987, p. 365)
1783 *krossi* (E *clothes*) 'clothes' (Smith 1987, p. 345)

/kr/
1783 *krassi* (E *scratch*) 'to scratch' (Smith 1987, p. 368)
1783 *krassikrassi* (E *scratch*) 'rash' (van den Berg 2000, p. 91)

/gr/
1783 *granman* (P *grão*, E *man*) 'governor, regent' (van den Berg 2000, p. 94)
1783 *grebbi* (E *grave*) 'grave' (Smith 1987, p. 368)
1783 *gretti* (E *grate*) 'grate' (Smith 1987, p. 368)
1783 *griddi* (E *greedy*) 'greedy' (Smith 1987, p. 370)
1783 *grunn* (E *ground*) 'ground' (Smith 1987, p. 368)
1783 *mangru* (E *mangrove*) 'mangrove' (van den Berg 2000, p. 90)
1783 *grang* (P *grão*) 'big' (van den Berg 2000, p. 105)

New clusters
/pl/
1783 *platti* (P *partir*) 'to divide' (Bruyn 1995, p. 189)

/dr/
1783 *middri* (E *middle*) 'middle' (Smith 1987, p. 379)
1783 *mindri* (E *middle*) 'middle' (Smith 1987, p. 379)

/kr/
1783 *kukru* (E *cook, room*) 'kitchen' (van den Berg 2000, p.98)
1783 *sukru* (D *suiker*) 'sugar' (van den Berg 2000, p. 100)
1783 *tigri* (E *tickle*) 'to tickle' (Smith 1987, p. 379)
1783 *tikkri* (E *tickle*) 'to tickle' (Smith 1987, p. 379)
1783 *tikri* (E *tickle*) 'to tickle' (Smith 1987, p. 379)

Appendix 8: Weygandt (1798)

/pl/
1798 *pley* (E *play*) 'to play' (Smith 1987, p. 365)
1798 *pleesie* (E *place*) 'place' (Smith 1987, p. 365)
1798 *pletie* (E *plate*) 'plate' (Smith 1987, p. 365)
1798 *pliesie* (E *please*) 'to please' (Smith 1987, p. 365)
1798 *pliesierie* (D *plezier*) 'pleasure' (Bruyn 1995, p. 55)
1798 *presie* (E *place*) 'place' (Smith 1987, p. 365)

/bl/
1798 *bleeni-* (E *blind*) 'blind' (Smith 1987, p. 345)
1798 *blessie* (E *bless*) 'to bless' (Smith 1987, p. 365)
1798 *bloedoe* (D *blood*) 'blood' (Smith 1987, p. 370)
1798 *blo(o)* (E *blow*) 'to blow' (Smith 1987, p. 345)

/br/
1798 *brada* (E *brother*) 'brother' (Smith 1987, p. 370)
1798 *brara* (E *brother*) 'brother' (Smith 1987, p. 370)
1798 *brekie* (E *break-*) 'breakfast' (Smith 1987, p. 368)
1798 *broekoe* (D *broek*) 'trousers' (Bruyn 1995, p. 71)

/fl/
1798 *frei* (E *fly*) 'to fly' (Smith 1987, p. 365)
1798 *fludu* (D *vloed*) 'flood' (Smith 1987, p. 370)
1798 *frudu* (D *vloed*) 'flood' (Smith 1987, p. 370)

/tr/
1798 *troe* (E *true*) 'true' (Smith 1987, p. 368)

/dr/
1798 *drem* (E *dream*) 'dream' (Smith 1987, p. 367)

/kl/
1798 *klosie* (E *clothes*) 'clothes' (Smith 1987, p. 345)
1798 *klosie-* (E *close*) 'close' (Smith 1987, p. 365)
1798 *krien* (E *clean*) 'clean' (Smith 1987, p. 365)
1798 *krosi-* (E *close*) 'close' (Smith 1987, p. 365)

/gr/
1798 *griedie* (E *greedy*) 'greedy' (Smith 1987, p. 370)
1798 *gron* (E *ground*) 'ground' (Smith 1987, p. 368)

New clusters
/tr/
1798 *gotroo* (E *gutter*) 'ditch' (Smith 1987, p. 376)
/gr/
1798 *nengree* (D *neger*) 'slave' (Bruyn 1995, p. 182)

Appendix 9: Schumann (1778)

/pl/
1778 *plantâsi* (D *plantagee*) 'plantation' (Donicie and Voorhoeve 1962, p. 84)
1778 *plêni* (E *plane*) 'plane' (Donicie and Voorhoeve 1962, p. 86)
1778 *plessiri* (D *plezier*) 'pleasure' (Donicie and Voorhoeve 1962, p. 88)
1778 *plitti* (E *split*) 'to split' (Donicie and Voorhoeve 1962, p. 88)
1778 *pluma* (P *pluma*) 'weather' (Donicie and Voorhoeve 1962, p. 83)
1778 *pranta* (P *plantar*) 'to plant' (Donicie and Voorhoeve 1962, p. 83)
1778 *pre* (E *play*) 'play; to play' (Donicie and Voorhoeve 1962, p. 86)

/pr/
1778 *pramusse* (E *promise*) 'promise' (Donicie and Voorhoeve 1962, p. 83)
1778 *prolo* (E *proud*) 'fully dressed; proud' (Donicie and Voorhoeve 1962, p.90)
1778 *proro* (E *proud*) 'fully dressed; proud' (Donicie and Voorhoeve 1962, p.90)

/bl/
1778 *blasi* (D *blaas*) 'bladder' (Donicie and Voorhoeve 1962, p. 13)
1778 *blo* (E *blow*) 'to blow, to breathe' (Donicie and Voorhoeve 1962, p. 19)
1778 *brakka* (E *black*) 'black' (Donicie and Voorhoeve 1962, p. 12)
1778 *brasi* (D *blaas*) 'bladder' (Donicie and Voorhoeve 1962, p. 13)
1778 *bro* (E *blow*) 'to blow; to breathe' (Donicie and Voorhoeve 1962, p. 19)

/br/
1778 *blaffo* (E *broth*) 'broth' (Donicie and Voorhoeve 1962, p. 12)
1778 *bra* (E *brother*) 'brother-in-law' (Donicie and Voorhoeve 1962, p. 14)
1778 *bradi* (E *broad*) 'breadth; broad' (Donicie and Voorhoeve 1962, p. 12)
1778 *brali* (E *broad*) 'breadth; broad' (Donicie and Voorhoeve 1962, p. 12)
1778 *brára* (E *brother*) 'brother' (Donicie and Voorhoeve 1962, p. 12)
1778 *brári* (E *broad*) 'breadth; broad' (Donicie and Voorhoeve 1962, p. 12)
1778 *brassa* (P *abraçar*) 'to embrace' (Donicie and Voorhoeve 1962, p. 13)
1778 *bredi* (D *breed*) 'broad' (Donicie and Voorhoeve 1962, p. 16)
1778 *brokko* (E *broke*) 'to break' (Donicie and Voorhoeve 1962, p. 20)
1778 *dubla* (P *dobrar*) 'to fold' (Donicie and Voorhoeve 1962, p. 29)
1778 *jabri* (P *abrir*) 'to open' (Donicie and Voorhoeve 1962, p. 48)

1778 *kubri* (P *cubrir*) 'to cover' (Ladhams 1999a, p. 238)
1778 *pobri* (P *pobre*) 'poor' (Donicie and Voorhoeve 1962, p. VII)
1778 *sombra* (P *sombra*) 'shadow' (Donicie and Voorhoeve 1962, p. 98)

/fl/
1778 *flau* (D *flauw*) 'unconscious(ness)' (Donicie and Voorhoeve 1962, p. 31)
1778 *fludu* (D *vloed*) 'flood' (Donicie and Voorhoeve 1962, p. 35)
1778 *frolo* (D *vloed*) 'flood' (Donicie and Voorhoeve 1962, p. 35)
1778 *froro* (D *vloed*) 'flood' (Donicie and Voorhoeve 1962, p. 35)
1778 *frudu* (D *vloed*) 'flood' (Donicie and Voorhoeve 1962, p. 35)
1778 *fringi* (E *fling*) 'to hurl' (Donicie and Voorhoeve 1962, p. 283)

/fr/
1778 *fri* (E *free*) 'freedom; free' (Donicie and Voorhoeve 1962, p. 282)
1778 *fruta* (P *fruta*) 'fruit' (Donicie and Voorhoeve 1962, p. 32)
1778 *frúku* (D *vroeg*) 'early' (Donicie and Voorhoeve 1962, p. 37)

/tr/
1778 *tranga* (E *strong*) 'strength; strong' (Donicie and Voorhoeve 1962, p. 101)
1778 *trapu* (E *trap*) 'trap' (Donicie and Voorhoeve 1962, p. 101)
1778 *trappo* (E *trap*) 'trap' (Donicie and Voorhoeve 1962, p. 101)
1778 *tremeh* (P *tremer*) to tremble' (Donicie and Voorhoeve 1962, p. 103)
1778 *trobbi* (E *trouble*) 'to disturb' (Donicie and Voorhoeve 1962, p. 108)
1778 *trokka* (P *trocar*) 'to exchange' (Donicie and Voorhoeve 1962, p. 109)
1778 *tru* (E *true*) 'true' (Donicie and Voorhoeve 1962, p. 110)

/dr/
1778 *dindru* (P *dentro*) 'inside' (Donicie and Voorhoeve 1962, p. 24)
1778 *dre* (E *dry*) 'dry' (Donicie and Voorhoeve 1962, p. 23)
1778 *dri* (D *drie*) 'three' (Donicie and Voorhoeve 1962, p. 24)
1778 *dringi* (E *drink*) 'ill strong drinks' (Donicie and Voorhoeve 1962, p. 24)
1778 *drumm* (E *drum*) 'drum' (Donicie and Voorhoeve 1962, p. 29)
1778 *drungu* (E *drunk*) 'drunk' (Donicie and Voorhoeve 1962, p. 29)
1778 *petra* (P *pedra*) 'rock' (Donicie and Voorhoeve 1962, p. VII)
1778 *pondri* (P *podre*) 'rotten' (Donicie and Voorhoeve 1962, p. 90)

/kl/
1778 *krossu* (E *cloth*) 'cloth; clothing' (Donicie and Voorhoeve 1962, p. 59)

/kr/
1778 *gressi* (P *crescer*) 'to grow' (Donicie and Voorhoeve 1962, p. VII)
1778 *grua* (P *crua*) 'raw' (Donicie and Vooerhoeve 1962, p. 61)
1778 *krassi* (E *scratch*) 'to itch' (Donicie and Voorhoeve 1962, p. 51)
1778 *kre* (E *cry*) 'to cry' (Donicie and Voorhoeve 1962, p. 56)
1778 *kriki* (E *creek*) 'creek' (Donicie and Voorhoeve 1962, p. 57)
1778 *krukkutu* (E *crooked*) 'crooked' (Donicie and Voorhoeve 1962, p. 63)

/gr/
1778 *grang* (P *grão*) 'large' (Donicie and Voorhoeve 1962, p. 38)
1778 *grangman* (P *grão*, E *man*) 'ruler' (Donicie and Voorhoeve 1962, p.38)
1778 *grebbi* (E *grave*) 'grave' Donicie and Voorhoeve 1962, p. 41)
1778 *griddi* (E *greedy*) 'greedy' (Donicie and Voorhoeve 1962, p. 42)
1778 *grità* (P *gritar*) 'to rush' (Donicie and Voorhoeve 1962, p. 42)
1778 *gro* (E *grow*) 'to grow' (Donicie and Voorhoeve 1962, p. 43)
1778 *grossu* (P grosso) 'thick' (Donicie and Voorhoeve 1962, p. VII)
1778 *grun* (E *ground*) 'round' (Donicie and Voorhoeve 1962, p. 43)
1778 *hangri* (E *hungry*) 'hunger; hungry' (Donicie and Voorhoeve 1962, p. 44)
1778 *mangru* (P *magro*) 'thin' (Donicie and Voorhoeve 1962, p. 71)
1778 *sangla* (P *sangrar*) 'to bleed' (Donicie and Voorhoeve 1962, p. 93)

New clusters
/pl/
1778 *platì* (P *partir*) 'to divide, to split' (Donicie and Voorhoeve 1962, p. 83)
1778 *plàja* (P *piranha*) 'piranha' (Donicie and Voorhoeve 1962, p. 86)

/pr/
1778 *prakiki* (P *periquito*) 'small parrot' (Donicie and Voorhoeve 1962, p. 83)
1778 *prati* (P *partir*) 'to divide; to split' (Donicie and Voorhoeve 1962, p. 83)
1778 *premissi* (D *permissie*) 'permission' (Donicie and Voorhoeve 1962, p. 88)
1778 *pretta* (P *apertar*) 'to press' (Donicie and Voorhoeve 1962, p. 86)
1778 *prikittu* (P *periquito*) 'small parrot' (Donicie and Voorhoeve 1962, p. 88)
1778 *prukâsi* (D *purgatie*) 'laxative' (Donicie and Voorhoeve 1962, p. 90)
1778 *sapri* (E *softly*) 'gentle; slow' (Donicie and Voorhoeve 1962, p. 92)
1778 *siprà* (P *erisipela*) 'skin disease' (Donicie and Voorhoeve 1962, p. VII)

/br/
1778 *brukà* (P *esburgar*) 'to peel' (Donicie and Voorhoeve 1962, p. 22)
1778 *dübri* (E *devil*) 'evil' (Donicie and Voorhoeve 1962, p. 24)
1778 *membre* (E *remember*) 'to think' (Donicie and Voorhoeve 1962, p. 75)
1778 *nebretem* (E *never*, *time*) 'never' (Donicie and Voorhoeve 1962, p. VII)

/fr/
1778 *safri* (E *softly*) 'gentle; slow' (Donicie and Voorhoeve 1962, p. 92)
1778 *tafra* (D *tafel*) 'table' (Donicie and Voorhoeve 1962, p. 101)

/tr/
1778 *lettre* (E *letter*) 'letter' (Donicie and Voorhoeve 1962, p. 66)
1778 *pantría* (P *panturrilha*) 'half of leg' (Donicie and Voorhoeve 1962, p. 84)
1778 *somtron* (E *some*, *turn*) 'sometimes' (Donicie and Voorhoeve 1962, p. 109)
1778 *sontron* (E *some*, *turn*) 'sometimes' (Donicie and Voorhoeve 1962, p. 109)
1778 *tronar* (P *tornar*) 'to turn back' (Donicie and Voorhoeve 1962, p. 109)
1778 *trotto* (P *torto*) 'left' (Donicie and Voorhoeve 1962, p. 109)
1778 *trussa* (P *torcer*) 'to twist a rope' (Donicie and Voorhoeve 1962, p. 109)

1778 *watra* (E/D *water*) 'water' (Donicie and Voorhoeve 1962, p. 114)

/dr/
1778 *drummi* (P *dormir*) 'to sleep' (Donicie and Voorhoeve 1962, p. 29)
1778 *gendri* (E *gentle*) 'rich' (Donicie and Voorhoeve 1962, p. 379)
1778 *mandru* (P *maduro*) 'ripe' (Donicie and Voorhoeve 1962, p. 71)
1778 *mindri* (E *middle*) 'middle' (Donicie and Voorhoeve 1962, p. 75)
1778 *padra* (E *paddle*) 'paddle' (Donicie and Voorhoeve 1962, p. 83)
1778 *sondre* (D *zonder*) 'without' (Donicie and Voorhoeve 1962, p. 98)

/kr/
1778 *krabùka* (P *calar a boca*) 'to be silent' (Ladhams 1999a, p. 238)
1778 *kramaù* (P *carvão*) 'charcoal' (Smith 1987, p. 344)
1778 *kruttu* (E *court*) 'court; to deliberate' (Donicie and Voorhoeve 1962, p. 63)
1778 *sukri* (D *suiker*) 'sugar' (Donicie and Voorhoeve 1962, p. 100)

/gr/
1778 *ningri* (D *neger*) 'Negro' (Donicie and Voorhoeve 1962, p. 79)
1778 *sangri* (P *sangue*) 'blood' (Donicie and Voorhoeve 1962, p. VII)

Appendix 10: Riemer (1779)

/pl/
1779 *plantasi* (D *plantage*) 'piece of land' (Arends and Perl 1995, p. 337)
1779 *pléni* (E *plane*) 'plane' (Arends and Perl 1995, p. 337)
1779 *pleshîri* (D *plezier*) 'pleasure' (Arends and Perl 1995, p. 337)
1779 *plitti* (E *split*) 'to split' (Arends and Perl 1995, p. 337)
1779 *pluma* (P *pluma*) 'feather' (Arends and Perl 1995, p. 337)
1779 *pranta* (P *plantar*) 'to plant' (Arends and Perl 1995, p. 337)
1779 *preh* (E *play*) 'play; to play' (Arends and Perl 1995, p. 339)
1779 *prolo* (E *proud*) 'fully dressed; proud' (Arends and Perl 1995, p. 340)
1779 *proro* (E *proud*) 'fully dressed; proud' (Arends and Perl 1995, p. 340)

/pr/
1779 *pramushe* (E *promise*) 'to promise' (Arends and Perl 1995, p. 339)

/bl/
1779 *blasi* (D *blaas*) 'bladder' (Arends and Perl 1995, p. 268)
1779 *bleshi* (E *bless*) 'to bless' (Arends and Perl 1995, p. 265)
1779 *blo* (E *blow*) 'to blow; to breathe' (Arends and Perl 1995, p. 265)
1779 *brasi* (D *blaas*) 'bladder' (Arends and Perl 1995, p. 268)
1779 *brakka* (E *black*) 'black' (Arends and Perl 1995, p. 265)
1779 *bro* (E *blow*) 'to blow; to breathe' (Arends and Perl 1995, p. 265)

/br/
1779 *bladi* (E *broad*) 'breadth; broad' (Arends and Perl 1995, p. 268)
1779 *bra* (E brother) 'brother in law' (Arends and Perl 1995, p. 268)
1779 *brâdi* (E broad) 'breadth; broad' (Arends and Perl 1995, p. 270)
1779 *brâli* (E broad) 'breadth; broad' (Arends and Perl 1995, p. 270)
1779 *brara* (E *brother*) 'brother' (Arends and Perl 1995, p. 268)
1779 *brâri* (E *broad*) 'breadth; broad' (Arends and Perl 1995, p. 270)
1779 *bredi* (E *bread*) 'European bread' (Arends and Perl 1995, p. 268)
1779 *dubla* (P *dobrar*) 'to fold' (Arends and Perl 1995, p. 277)
1779 *jabri* (P *abrir*) 'to open' (Arends and Perl 1995, p. 295)
1779 *kubri* (P *cubrir*) 'to cover' (Arends and Perl 1995, p. 309)
1779 *pobri* (P *pobre*) 'poor' (Arends and Perl 1995, p. 337)
1779 *sombra* (P *sombra*) 'shadow' (Arends and Perl 1995, p. 349)

/fl/
1779 *flau* (D *flauw*) 'unconscious(ness)' (Arends and Perl 1995, p. 281)
1779 *fludu* (D *vloed*) 'flood' (Arends and Perl 1995, p. 283)
1779 *fringi* (E *fling*) 'to hurl' (Arends and Perl 1995, p. 283)
1779 *frolo* (D *vloed*) 'flood' (Arends and Perl 1995, p. 283)
1779 *froro* (D *vloed*) 'flood' (Arends and Perl 1995, p. 283)
1779 *frudu* (D *vloed*) 'flood' (Arends and Perl 1995, p. 283)
1779 *fruge* (D *vroeg*) 'early in the morning' (Arends and Perl 1995, p. 283)

/fr/
1779 *fredde* (E *afraid*) 'fear; to fear' (Arends and Perl 1995, p. 282)
1779 *fri* (E *free*) 'freedom; free' (Arends and Perl 1995, p. 282)

/tr/
1779 *contri* (E *country*) 'land, region' (Arends and Perl 1995, p. 270)
1779 *kontri* (E *country*) 'land, region' (Arends and Perl 1995, p. 270)
1779 *grantripa* (P *grão*, *tripa*) 'stomach' (Arends and Perl 1995, p. 288)
1779 *oterbanda* (P *outro*, *banda*) 'opposite bank' (Arends and Perl 1995, p. 331)
1779 *oterdagga* (P *outro*, D *dag*) 'once, another time' (Arends and Perl 1995, p. 331)
1779 *oterisredè*(P *outro*, E *yesterday*) 'day before yesterday' (Arends and Perl, p. 331)
1779 *otromaija* (P *outro*, *manhã*) 'day after tomorrow' (Arends and Perl 1995, p. 331)
1779 *otrowan* (P *outro*, E *wan*) 'an other' (Arends and Perl 1995, p. 331)
1779 *tranga* (E *strong*) 'strength; strong' (Arends and Perl 1995, p. 360)
1779 *trappo* (E *trap*) 'trap' (Arends and Perl 1995, p. 360)
1779 *trapu* (E *trap*) 'trap' (Arends and Perl 1995, p. 360)
1779 *tremeh* (P *tremer*) 'to tremble' (Arends and Perl 1995, p. 360)
1779 *triki* (E *trick*) 'trick' (Arends and Perl 1995, p. 360)
1779 *trobbi* (E *trouble*) 'to disturb' (Arends and Perl 1995, p.360)
1779 *trokka* (P *trocar*) 'to exchange' (Arends and Perl 1995, p. 361)
1779 *tru* (E *true*) 'true' (Arends and Perl 1995, p. 361)

/dr/
1779 *dindru* (P *dentro*) 'inside' (Arends and Perl 1995, p. 274)
1779 *dre* (E *dry*) 'dry' (Arends and Perl 1995, p. 276)
1779 *dri* (D *dry*) 'three' (Arends and Perl 1995, p. 276)
1779 *dringi* (E *drink*) 'all strong drinks' (Arends and Perl 1995, p. 276)
1779 *dringihosho* (E *drink, house*) 'inn' (Arends and Perl 1995, p. 276)
1779 *dritenti* (D *dri*, ?) 'thirty' (Arends and Perl 1995, p. 276)
1779 *drumm* (E *drum*) 'drum' (Arends and Perl 1995, p. 277)
1779 *drumman* (E *drumman*) 'drummer' (Arends and Perl 1995, p. 277)
1779 *drunguman* (E *drunk, man*) 'drunkard' (Arends and Perl 1995, p. 277)
1779 *petra* (P *pedra*) 'rock' (Arends and Perl 1995, p. 335)
1779 *pondri* (P *podre*) 'rotten' (Arends and Perl 1995, p. 338)

/kl/
1779 *kloshu* (E *cloth*) 'cloth; clothing' (Arends and Perl 1995, p. 308)
1779 *kroshu* (E *cloth*) 'cloth; clothing' (Arends and Perl 1995, p. 308)
1779 *kroshubai* (E *close by*) 'close by' (Arends and Perl 1995, p. 304)

/kr/
1779 *glua* (P *crua*) 'raw' (Arends and Perl 1995, p. 286)
1779 *greshi* (P *crescer*) 'to grow' (Arends and Perl 1995, p. 288)
1779 *krabbo* (D *krabben*) 'to scrape, to scratch' (Arends and Perl 1995, p. 307)
1779 *krabu* (E *crab*) 'crab' (Arends and Perl 1995, p. 307)
1779 *krakra* (Twi *kràkra*) 'to work eagerly' (Arends and Perl 1995, p. 307)
1779 *krashikrashi* (E *scratch*) 'rash' (Arends and Perl 1995, p. 308)
1779 *kreti* (D *krijt*) 'chalk' (Arends and Perl 1995, p. 308)
1779 *kriki* (E *creek*) creek' (Arends and Perl 1995, p. 308)
1779 *krukkutu* (E *crooked*) 'crooked' (Arends and Perl 1995, p. 310)

/gr/
1779 *grang* (P *grão*) large' (Arends and Perl 1995, p. 288)
1779 *grangkasha* (P *grão*, P *casa*) 'barn' (Arends and Perl 1995, p. 288)
1779 *grangman* (P *grão*, E *man*) 'ruler' (Arends and Perl 1995, p. 288)
1779 *grangsombre* (P *grão*, P *os homens*) 'old people' (Arends and Perl 1995, p. 288)

1779 *grantripa* (P *grão, tripa*) 'stomach' (Arends and Perl 1995, p. 288)
1779 *grebbi* (E *grave*) 'grave' (Arends and Perl 1995, p. 288)
1779 *griddi* (E *greedy*) 'greedy' (Arends and Perl 1995, p. 288)
1779 *grittà* (P *gritar*) 'to rush' (Arends and Perl 1995, p. 288)
1779 *gro* (E *grow*) 'to grow' (Arends and Perl 1995, p. 288)
1779 *grogrowan* (E *grow, one*) 'adult' (Arends and Perl 1995, p. 288)
1779 *groshu* (P *grosso*) 'thick' (Arends and Perl 1995, p. 289)
1779 *grunn* (E *ground*) 'ground' (Arends and Perl 1995, p. 289)
1779 *hangri* (E *hungry*) 'hunger; hungry' (Arends and Perl 1995, p. 289)
1779 *sangla* (P *sangrar*) 'to bleed' (Arends and Perl 1995, p. 343)

New clusters

/pl/

1779 *plati* (P *partir*) 'to divide; to split' (Arends and Perl 1995, p. 337)
1779 *plenja* (P *piranha*) 'piranha' (Arends and Perl 1995, p. 337)

/pr/

1779 *prakiki* (P *periquito*) 'small parrot' (Arends and Perl 1995, p. 339)
1779 *prati* (P *partir*) 'to divide; to split' (Arends and Perl 1995, p. 337)
1779 *pretta* (P *apertar*) 'to press' (Arends and Perl 1995, p. 339)
1779 *prikittu* (P *periquito*) 'small parrot' (Arends and Perl 1995, p. 340)
1779 *sangri* (P *sangue*) 'blood' (Arends and Perl 1995, 343)
1779 *prukâsi* (D *purgatie*) 'laxative' (Arends and Perl 1995, p. 340)
1779 *sapri* (E *softly*) 'gentle; slow' (Arends and Perl 1995, p. 341)

/br/

1779 *dübri* (E *devil*) 'evil' (Arends and Perl 1995, p. 273)
1779 *membre* (E *remember*) 'to think; thought' (Arends and Perl 1995, p. 324)
1779 *nebretem* (E *never*, *time*) 'never' (Arends and Perl 1995, p. 329)

/fr/

1779 *safri* (E *softly*) 'gentle; slow' (Arends and Perl 1995, p. 341)
1779 *tafra* (D *tafel*) 'table' (Arends and Perl 1995, p. 353)

/tr/

1779 *lettre* (E *letter*) 'letter' (Arends and Perl 1995, p. 314)
1779 *mennitron* (E *many*, *turn*) 'often' (Arends and Perl 1995, p. 324)
1779 *pantrîa* (P *panturrilha*) 'half of leg' (Arends and Perl 1995, p. 333)
1779 *somtron* (E *some*, *turn*) 'sometimes' (Arends and Perl 1995, p. 349)
1779 *sontron* (E *some*, *turn*) 'sometimes' (Arends and Perl 1995, p. 349)
1779 *tronna* (P *tornar*) 'to turn back' (Arends and Perl 1995, p. 361)
1779 *trotto* (P *torto*) 'left; wrong' (Arends and Perl 1995, p. 361)
1779 *trusha* (P *torcer*) 'to twist a rope' (Arends and Perl 1995, p. 361)
1779 *watra* (E/D *water*) 'water' (Arends and Perl 1995, p. 368)

/dr/

1779 *dretta* (P *derreter*) 'to melt' (Arends and Perl 1995, p. 276)
1779 *drummi* (P *dormir*) 'to sleep' (Arends and Perl 1995, p. 277)
1779 *gendri* (E *gentle*) 'rich' (Arends and Perl 1995, p. 286)
1779 *gendriman* (E *gentle*, *man*) 'rich man' (Arends and Perl 1995, p. 286)
1779 *mandru* (P *maduru*) 'ripe' (Arends and Perl 1995, p. 320)
1779 *mindri* (E *middle*) 'middle' (Arends and Perl 1995, p. 324)
1779 *padra* (E *paddle*) 'paddle' (Arends and Perl 1995, p. 332)
1779 *sondre* (D *zonder*) 'without' (Arends and Perl 1995, p. 349)

/kr/
1779 *akra* (Efik/Igbo/Yoruba *akara*) 'pancake' (Arends and Perl 1995, p. 254)
1779 *bakra* (Efik *mbakara*) 'European' (Arends and Perl 1995, p. 259)
1779 *krabùka* (P *calar a boca*) 'to be quiet' (Arends and Perl 1995, p. 307)
1779 *kramau* (P *carvão*) 'dead coals' (Arends and Perl 1995, p. 307)
1779 *kukru* (E *cook*, *room*) 'kitchen' (Arends and Perl 1995, p. 310)
1779 *sukri* (D *suiker*) 'sugar' (Arends and Perl 1995, p. 351)

/gr/
1779 *granganda* (P *garganta*) 'neck; throat' (Arends and Perl 1995, p. 288)
1779 *ningri* (D *neger*) 'Negro' (Arends and Perl 1995, p. 329)

Appendix 11: Maroon letters (1789, 1790 and 1791)

/br/
1789 *brara* (E *brother*) 'brother' (Smith 1987, p. 370
1790 *briffi* (D *brief*) 'letter' (Arends and Perl 1995, p. 386)
1791 *briffi* (D *brief*) 'letter' (Arends and Perl 1995, p. 383)
1790 *kubri* (P *cubrir*) 'to cover' (Arends and Perl 1995, p. 386)
1791 *brara* (E *brother*) 'brother' (Arends and Perl 1995, p. 383)

/tr/
1791 *contri* (E *country*) 'country' (Arends and Perl 1995, p. 383)
1791 *contrieman* (E *country*, *man*) 'countryman' (Arends and Perl 1995, p. 385)
1791 *kondre* (E *country*) 'country' (Arends and Perl 1995, p. 385)
1791 *va troe* (E *for*, *true*) 'truly' (Arends and Perl 1995, p. 384)
1791 *tranga* (E *strong*) 'strength' (Arends and Perl 1995, p. 383)

/kr/
1790 *schriffi* (D *schrijven*) 'to write' (Arends and Perl 1995, p. 386)

/gr/
1790 *hangri* (E *hungry*) 'hunger' (Arends and Perl 1995, p. 385)
1791 *grang* (P *grão*) 'great' (Arends and Perl 1995, p. 383)

New clusters
/br/
1790 *dubri* (E *devil*) 'evil' (Arends and Perl 1995, p. 386)
1791 *membre* (E *remember*) 'to think' (Arends and Perl 1995, p. 384)

Appendix 12: Early Aluku

Unepenthesized clusters
/gr/
1890 *groom* (E *ground*) 'ground' (Bilby 1993, p. 33)

1890 *-gromm* (E *ground*) 'ground' (Bilby 1993, p. 33)

New clusters
/tr/
1890 *-watra* (E/D *water*) 'water' (Bilby 1993, p. 33)

Epenthesized clusters with vowel copying
/dr/
1877 *dili day woko* (D *drie*, E *day*, E *work*) 'Tuesday' (Bilby 1993, p. 33)
1877 *dili mun* (D *drie*, E *moon*) 'March' (Bilby 1993, p. 33)
1877 *tina dili* (D *tien*, D *drie*) 'thirteen' (Bilby 1993, p. 33)

Appendix 13: Modern Assimilated Cameroon Pidgin English

/pl/
pilenti (E *plenty*) 'any' (Schneider 1966, p. 228)

/br/
bilola (E *brother*) 'brother' (Schneider 1966, p. 228)

/tr/
tilong (E *strong*) 'strength' (Schneider 1966, p. 225)
tilibu (E *trouble*) 'trouble' (Schneider 1966, p. 225)
tilu (E *true*) 'true' (Schneider 1966, p. 227)

/kr/
kilay (E *cry*) 'to cry' (Schneider 1966, p. 219)

Appendix 14: Modern Aluku

Liquid deletion
/dr/
dẽn (E *dream*) 'to dream' (Hurault 1983, p. 28)
dingi (E *drink*) 'to drink' (Hurault 1983, p. 5)
dũngu (E *drunk*) 'drunk' (Hurault 1983, p. 17)

Epenthesized clusters
/pl/
paạta (D *plat*) 'to flatten' (Hurault 1983, p. 1)
pę̨ę̨ (E *play*) 'ceremony' (Hurault 1983, p. 7)
pę̨ę̨ši (E *place*) 'place' (Hurault 1983, p. 12)
piiši (E *pleased*) 'happy' (Hurault 1983, p. 9)
piiti (E *split*) 'to split' (Hurault 1983, p. 14)

/bl/
baạu (D *blauw*) 'blue' (Hurault 1983, p. 4)
béeni (E *blind*) 'blind' (Smith 1977a, p. 27)
bọọ (E *blow*) 'to breathe' (Hurault 1983, p. 28)
bọomiki (D *blommetje*) 'flower' (Hurault 1983, p. 15)
buulu (D *bloed*) 'blood' (Hurault 1983, p. 29)

/br/
bẹẹlẹ (E *bread*) 'bread' (Hurault 1983, p. 23)
booki (D *brug*) 'bridge' (Hurault 1983, p. 25)
boọko (E *broke*) 'to break' (Hurault 1983, p. 6)
boõ (E *burn*) 'to burn' (Hurault 1983, p. 6)

/fl/
fée (E *fly*) 'fly' (Smith 1977b, p. 33)

/fr/
fii (E *free*) 'free' (Hurault 1983, p. 19)
fuuku (D *vroeg*) 'early' (Hurault 1983, p. 16)

/dr/
dẹẹsi (E *dress*) 'medicine' (Hurault 1983, p. 27)
doõ (E *drum*) 'drum' (Hurault 1983, p. 31)

/kl/
koóši (E *clothes*) 'clothes' (Smith 1977a, p. 19)

/kr/
kaạbu (D *krabben*) 'to scratch' (Hurault 1983, p. 16)
kaakiti (D *kracht*) 'powerful' (Hurault 1983, p. 15)
kaạši (E *scratch*) 'to scratch' (Hurault 1983, p. 16)
kiiki (E *creek*) 'creek' (Hurault 1983, p. 10)

/gl/
gaạta (D *glad* 'smooth') 'to slide' (Hurault 1983, p. 16)

/gr/
góo (E *grow*) 'to grow' (Smith 1977b, p. 34)
goon (E *ground*) 'ground' (Smith 1977b, p. 34)
guun (D *groen*) 'green' (Hurault 1983, p. 5)

Appendix 15: Early Tok Pisin

/pl/
1943 *pelasta* (E *plaster*) 'adhesive plaster' (Murphy 1966, p. 86)
1943 *peles* (E *place*) 'village, homeland' (Murphy 1966, p. 86)

1943 *pilei* (E *play*) 'to play' (Murphy 1966, p. 99)
1943 *piles* (E *place*) 'village' (Murphy 1966, p. 99)
1949 *palanti* (E *plenty*) 'plenty' (Mosel 1980, p. 19)

/bl/
1943 *bilanket* (E *blanket*) 'blanket' (Murphy 1966, p. 61)
1943 *bilu* (E *blue*) 'blue' (Murphy 1966, p. 111)
1943 *bolok* (E *block*) 'pulley block' (Murphy 1966, p. 111)

/br/
1943 *barata* (E *brother*) 'brother' (Murphy 1966, p. 112)
1943 *birela* (E *umbrella*) 'umbrella' (Murphy 1966, p. 62)
1943 *biringim* (E *bring*, *him*) 'to bring' (Murphy 1943, p. 112)
1943 *biris* (E *bridge*) 'bridge' (Murphy 1966, p. 62)
1943 *birum* (E *broom*) 'broom' (Murphy 1966, p. 62)
1943 *birumim* (E *broom*, *him*) 'to sweep' (Murphy 1966, p. 62)
1943 *paraidel* (E *bridle*) 'bridle' (Murphy 1966, p. 86)

/fl/
1943 *bilasim* (E *flash*, *him*) 'to decorate' (Murphy 1966, p. 62)

/fr/
1943 *paraim* (E *fry*, *him*) 'to fry' (Murphy 1966, p. 86)
1943 *paraipan* (E *frypan*) 'frypan' (Murphy 1966, p. 86)
1943 *poreit* (E *afraid*) 'afraid' (Murphy 1966, p. 88)

/θr/
1943 *toromei* (E *throw*, *him*, *away*) 'to throw (away)' (Murphy 1966, p. 100)

/tr/
1943 *tiru* (E *true*) 'true' (Murphy 1966, p. 3)
1943 *tirausis* (E *trousers*) 'trousers' (Murphy 1966, p. 100)
1943 *torowel* (E *trouble*) 'trouble' (Murphy 1966, p. 159)
1949 *turu* (E *true*) 'true' (Mosel 1980, p. 19)

/dr/
1943 *diring* (E *drink*) 'drink; to drink' (Murphy 1966, p. 65)
1943 *diringim* (E *drink*, *him*) 'to drink' (Murphy 1966, p. 65)
1943 *dirip* (E *drift*) 'to drift' (Murphy 1966, p. 65)

/kl/
1943 *kilaut* (E *cloud*) 'cloud' (Murphy 1966, p. 75)
1943 *kilia* (E *clear*) 'to clear out; cleared' (Murphy 1966, p. 75)
1943 *kilinim* (E *clean*, *him*) 'to clean' (Murphy 1966, p. 57)
1943 *kilok* (E *kilok*) 'clock' (Murphy 1966, p. 56)

/kr/
1943 *kirismas* (E *Christmas*) 'Christmas' (Murphy 1966, p. 75)
1943 *koroba* (E *crowbar*) 'crowbar' (Murphy 1966, p. 76)
1943 *koros* (E *cross*) 'angry; cross (n.)' (Murphy 1966, p. 76)
1943 *korosim* (E *cross, him*) 'to scold' (Murphy 1966, p. 76)

/gl/
1943 *Inggilis* (E *English*) 'English' (Murphy 1966, p. 71)

/gr/
1943 [gə 'ris] (E *grease*) 'grease, flattery' (Hall 1943, p. 16)
1943 *giris* (E *giris*) 'fat; grease' (Murphy 1966, p. 67)
1943 *hanggiri* (E *hungry*) 'hunger; hungry' (Murphy 1966, p. 69)
1943 [gə 'ris] (E *grease*) 'grease, flattery' (Hall 1943, p. 16)
1943 *giris* (E *giris*) 'fat; grease' (Murphy 1966, p. 67)
1943 *hanggiri* (E *hungry*) 'hunger; hungry' (Murphy 1966, p. 69)

Appendix 16: Early Bislama

/dr/
-1919 *derrink* (E *drink*) 'to drink' (Crowley 1998, p. 73)
-1919 *derronk* (E *drunk*) 'drunk' (Crowley 1998, p. 73)

/gr/
-1899 *angérè* (E *hungry*) 'hungry' (Crowley 1998, p. 78)

Appendix 17: Early Solomon Islands Pidgin English

/pl/
bilai (E *play*) 'play' (Jourdan and Keesing 1997, p. 409)

/br/
birek (E *break*) 'to break' (Keesing 1991b, p. 330)

/θr/
torou-em (E *throw, him*) 'to throw' (Keesing 1991b, p. 324)

/tr/
tarake (E *truck*) 'truck' (Jourdan and Keesing 1997, p. 411)

/kr/
sikarapu (E *scrub*) 'bush' (Jourdan and Keesing 1997, p. 409)

Appendix 18: Modern Tok Pisin

/pl/
peles (E *peles*) 'village' (Mihalic 1957, p. xviii)
peles (E *place*) 'place' (Pawley 1975, p. 216)
peles (E *place*) 'village' (Laycock 1985, p. 303)
peles (E *place*) 'village' (Smith 2002, p. 50)
pelet (E *plate*) 'plate' (Goulden 1990, p. 50)
pilai (E *play*) 'to play' (Mihalic 1957, p. 107)
pilai (E *play*) 'to play' (Steinbauer 1969, p. 77)
pilai (E *play*) 'to play' (Smith 2002, p. 47)

/br/
barata (E *brother*) 'brother' (Smith 2002, p. 46)
barata (E *brother*) 'brother' (Pawley 1975, p. 216)
biřis (E *bridge*) 'bridge' (Pawley 1975, p. 220)
buruk (E *broke*) 'to break' (Smith 2002, p. 132)

/fl/
bilas (E *flash*) 'decoration; to decorate' (Mihalic 1957, p. 17)
bilas (E *flash*) 'smart' (Smith 2002, p. 68)
bilasim (E *flash*, *him*) 'to decorate' (Mihalic 1957, p. 17)
bilasim (E *flash*) 'to decorate' (Steinbauer 1969, p. 18)
filai (E *fly*) 'to fly' (Pawley 1975, p. 217)
filak (E *flag*) 'flag' (Hunter 1986, p. 9)
palai (E *fly*) 'to fly' (Smith 2002, p. 51)

/tr/
turu (E *true*) 'very' (Smith 2002, p. 177)

/kl/
kilin (E *clean*) 'clean' (Laycock 1985, p. 303)
kilok (E *clock*) 'clock' (Hunter 1986, p. 64)
kolos (E *clothes*) 'clothes' (Smith 2002, p. 67)

/kr/
koros (E *cross*) 'to be angry; to get angry' (Smith 2002, p. 141)
korosim (E *cross*) 'to anger' (Smith 2002, p. 141)
kurukutim (E *crooked*) 'to bend, to twist, to ruin' (Pawley 1975, p. 216)
sigirapim (E *scrape*) 'to rub' (Smith 2002, p. 79)
sukuřu: (E *screw*) 'screw, joint' (Pawley 1975, p. 220)

/gr/
giraun (E *ground*) 'ground' (Pawley 1975, p. 216)
giraun (E *ground*) 'ground' (Laycock 1985, p. 303)
kilogiram (E *kilogram*) 'kilogram' (Hunter 1986, p. 50)

Appendix 1: Early Barbadian

/t/
1835 *whara* (E *what*) 'what' (Fields 1995, p. 94)

/l/
1818 *spoily* (E *spoil*) 'to spoil' (Fields 1995, p. 94)

/s/
1818 *missa* (E *missa*) 'miss' (Rickford and Handler 1994, p. 242)

/k/
1799 *workee* (E *work*) 'to work' (Rickford and Handler 1994, p. 236)

Appendix 2: Early Saint Kittitian

/nd/
-1785- *behine* (E *behind*) 'behind' (Bruyn and Shrimpton 1999, p. 420)
-1785- *fine* (E *find*) 'to find' (Bruyn and Shrimpton 1999, p. 423)
-1785- *han* (E *hand*) 'hand' (Bruyn and Shrimpton 1999, p. 424)
-1785- *mine* (E *mind*) 'to mind' (Bruyn and Shrimpton 1999, p. 425)
-1785- *pen* (E *spend*) 'to spend' (Bruyn and Shrimpton 1999, p. 427)
-1785- *pown* (E *pound*) 'pound' (Bruyn and Shrimpton 1999, p. 427)
-1785- *sen* (E *send*) 'to send' (Bruyn and Shrimpton 1999, p. 427)
-1785- *tan* (E *stand*) 'to stay' (Bruyn and Shrimpton 1999, p. 428)
-1834- *tan* (E *stand*) 'to stay' (Parkvall and Edlund 1997–1998)

/st/
-1785- *mus* (E *must*) 'must' (Bruyn and Shrimpton 1999, p. 426)
-1785- *muss* (E *must*) 'must' (Bruyn and Shrimpton 1999, p. 426)

/t/
-1785- *sote* (E *sort*) 'sort' (Bruyn and Shrimpton 1999, p. 428)
-1785- *warra* (E *what*) 'what' (Parkvall and Edlund 1997–1998)
-1785- *wharra* (E *what*) 'what' (Bruyn and Shrimpton 1999, p. 430)
-1785- *whorraw* (E *what*) 'what' (Bruyn and Shrimpton 1999, p. 430)
-1785- *worraw* (E *what*) 'what' (Bruyn and Shrimpton 1999, p. 430)
-1785- *worrer* (E *what*) 'what' (Bruyn and Shrimpton 1999, p. 430)
-1785- *yettah* (E *eat*) 'to eat' (Bruyn and Shrimpton 1999, p. 430)
-1785- *yetty* (E *eat*) 'to eat' (Bruyn and Shrimpton 1999, p. 430)

/l/
-1785- *terry* (E *tell*) 'to tell' (Bruyn and Shrimpton 1999, p. 429)
1834 *kirry* (E *kill*) 'to kill' (Parkvall and Edlund 1997–1998)

/r/
-1785- *deary* (E *dear*) 'dear' (Bruyn and Shrimpton 1999, p. 422)
-1785- *deery* (E *dear*) 'dear' (Bruyn and Shrimpton 1999, p. 422)
-1785- *furer* (E *far*) 'far' (Bruyn and Shrimpton 1999, p. 423)
-1785- *moreer* (E *more*) 'more' (Bruyn and Shrimpton 1999, p. 426)
-1785- *morrer* (E *more*) 'more' (Bruyn and Shrimpton 1999, p. 426)
-1785- *ierry* (dial. E *year*) 'to hear' (Bruyn and Shrimpton 1999, p. 430)
-1785- *irry* (dial. E *year*) 'to hear' (Bruyn and Shrimpton 1999, p. 430)
-1785- *yeary* (dial. E *year*) 'to hear' (Bruyn and Shrimpton 1999, p. 430)
-1785- *yerry* (dial. E *year*) 'to hear' (Bruyn and Shrimpton 1999, p. 430)

/s/
-1785- *wosser* (E *worse*) 'worse' (Bruyn and Shrimpton 1999, p. 430)

/k/
-1785- *lek aw* (E *like*) 'like, as' (Bruyn and Shrimpton 1999, p. 425)
-1785- *leke* (E *like*) 'like, as' (Bruyn and Shrimpton 1999, p. 425)
-1785- *pake* (E *speak*) 'to speak' (Bruyn and Shrimpton 1999, p. 427)
-1785- *peke* (E *speak*) 'to speak' (Bruyn and Shrimpton 1999, p. 427)
-1785- *peke* (E *speak*) 'to speak' (Parkvall and Edlund 1997–1998)

Appendix 3: Early Guyanese

/nt/
1899 *wan'* (E *want*) 'to want' (Rickford 1987, p. 104)

/nd/
1899 *behin'* (E *behind*) 'behind' (Rickford 1987, p. 103)
1899 *fin'* (E *find*) 'to find' (Rickford 1987, p. 104)
1899 *han'* (E *hand*) 'hand' (Rickford 1987, p. 104)
1899 *'tan'* (E *stand*) 'to stand' (Rickford 1987, p. 104)
1905 *an'* (E *and*) 'and' (Rickford 1987, p. 112)

/st/
1905 *bu's'*[1] (E *burst*) 'to burst' (Rickford 1987, p. 112)

/s/
-1891- *meesy* (E *miss*) 'miss' (Rickford 1987, p. 107)

[1] The first apostrophe does not indicate the deletion of /r/ but rather reminds the reader that in standard English orthography there should be an *r* there.

/k/
1859 *workey* (E *work*) 'to work' (Parkvall and Edlund 1997–1998)
1916 *tekky* (E *take*) 'to take' (Rickford 1987, p. 61)

Appendix 4: Early Saramaccan

/p/
1778 *hoppe* (E *up*) 'to stand up' (Donicie and Voorhoeve 1962, p. 47)
1778 *hoppo* (E *up*) 'to stand up' (Donicie and Voorhoeve 1962, p. 47)
1778 *sippi* (E *ship*) 'ship' (Donicie and Voorhoeve 1962, p. 97)
1778 *shippi* (E *ship*) 'ship' (Donicie and Voorhoeve 1962, p. 97)
1778 *skopo* (D *schoop-*) 'to kick' (Donicie and Voorhoeve 1962, p. 96)
1778 *srepi* (E *self*) 'self' (Donicie and Voorhoeve 1962, p. 94)
1778 *tappa* (E *stop*) 'to close; to cover' (Donicie and Voorhoeve 1962, p. 102)
1778 *trapo* (E *trap*) 'trap' (Donicie and Voorhoeve 1962, p. 102)
1778 *trapu* (E *trap*) 'trap' (Donicie and Voorhoeve 1962, p. 102)
1778 *tumpi* (E *stump*) 'stump' (Donicie and Voorhoeve 1962, p. 108)

/b/
1778 *bríbi* (E *believe*) to believe' (Donicie and Voorhoeve 1962, p. 17)
1778 *djombo* (E *jump*) 'to jump' (Donicie and Voorhoeve 1962, p. 26)
1778 *grebbi* (E *grave*) 'grave' (Donicie and Voorhoeve 1962, p. 41)
1778 *habi* (E *have*) 'to have' (Donicie and Voorhoeve 1962, p. 44)
1778 *krabu* (E *crab*) 'crab' (Donicie and Voorhoeve 1962, p. 51)
1778 *libi* (E *live*) 'to live' (Donicie and Voorhoeve 1962, p. 66)
1778 *lobbi* (E *love*) 'to love' (Donicie and Voorhoeve 1962, p. 66)
1778 *lobi* (E *rub*) 'to rub' (Donicie and Voorhoeve 1962, p. 67)
1778 *tobbo* (E *tub*) 'tub' (Donicie and Voorhoeve 1962, p. 107)

/f/
1778 *blaffo* (E *broth*) 'broth' (Donicie and Voorhoeve 1962, p. 12)
1778 *effi* (E *if*) 'if' (Donicie and Voorhoeve 1962, p. 29)
1778 *laffo* (E *laugh*) 'to laugh' (Donicie and Voorhoeve 1962, p. 64)
1778 *nuffe* (E *enough*) 'enough' (Donicie and Voorhoeve 1962, p. 79)
1778 *skrufu* (D *schroef*) 'screw' (Donicie and Voorhoeve 1962, p. 100)
1779 *tiffi* (E *teeth*) 'tooth' (Arends and Perl 1995, p. 358)
1778 *veifi* (D *vijf*) 'five' (Donicie and Voorhoeve 1962, p. 32)

/t/
1778 *aiti* (E *eight*) 'eight' (Donicie and Voorhoeve 1962, p. 2)
1778 *béti* (E *bait*) 'bait' (Donicie and Voorhoeve 1962, p. 17)
1778 *boto* (E *boat*) 'boat' (Donicie and Voorhoeve 1962, p. 20)
1778 *djakketi* (E *jacket*) 'jacket' (Donicie and Voorhoeve 1962, p. 25)
1778 *feti* (E *fight*) 'to fight' (Donicie and Voorhoeve 1962, p. 33)
1778 *foto* (E *fort*) 'city' (Donicie and Voorhoeve 1962, p. 35)

1778 *fütti*[2] (E *fit*) 'to fit' (Donicie and Voorhoeve 1962, p. 34)
1778 *futu* (E *foot*) 'foot' (Donicie and Voorhoeve 1962, p. 37)
1778 *goto*[3] (D *goot*) 'gutter' (Donicie and Voorhoeve 1962, p. 43)
1778 *hati* (E *hurt*) 'pain' (Donicie and Voorhoeve 1962, p. 45)
1778 *hatti* (E *hurt*) 'pain' (Donicie and Voorhoeve 1962, p. 45)
1778 *jette* (E *yet*) 'still' (Donicie and Voorhoeve 1962, p. 50)
1778 *kommotto* (E *come out*) 'to go away' (Donicie and Voorhoeve 1962, p. 62)
1778 *kotti* (E *cut*) 'to cut' (Donicie and Voorhoeve 1962, p. 60)
1778 *kotto* (D *koud*) 'cold' (Donicie and Voorhoeve 1962, p. 60)
1778 *kreti* (D *krijt*) 'chalk' (Donicie and Voorhoeve 1962, p. 56)
1778 *krukutu* (E *crooked*) 'crooked' (Donicie and Voorhoeve 1962, p. 61)
1778 *kwetikweti* (E *quite*) 'totally' (Donicie and Voorhoeve 1962, p. 60)
1778 *lati* (D *laat*) 'late' (Donicie and Voorhoeve 1962, p. 64)
1778 *latta* (D *lat*) 'bar' (Donicie and Voorhoeve 1962, p. 64)
1778 *leti* (E *right*) 'right' (Donicie and Voorhoeve 1962, p. 66)
1778 *lombotto* (E *round about*) 'to surround' (Donicie and Voorhoeve 1962, p. 20)
1778 *luntu* (E *round*) 'round' (Donicie and Voorhoeve 1962, p. 67)
1778 *lutu* (E *root*) 'root' (Donicie and Voorhoeve 1962, p. 68)
1778 *meti* (E *meat*) 'animal; meat' (Donicie and Voorhoeve 1962, p. 74)
1778 *miti* (E *meet*) 'to meet' (Donicie and Voorhoeve 1962, p. 76)
1778 *neti* (E *night*) 'night' (Donicie and Voorhoeve 1962, p. 78)
1778 *plitti* (E *split*) 'to split' (Donicie and Voorhoeve 1962, p. 88)
1778 *reti* (E *right*) 'right' (Donicie and Voorhoeve 1962, p. 66)
1778 *rombotto* (E *round about*) 'to surround' (Donicie and Voorhoeve 1962, p. 20)
1778 *satu* (E *salt*) 'salt' (Donicie and Voorhoeve 1962, p. 93)
1778 *setti* (E *set*) 'to begin' (Donicie and Voorhoeve 1962, p. 95)
1778 *swütti*[4] (E *sweet*) 'tasty' (Donicie and Voorhoeve 1962, p. 100)
1778 *tschatti* (E *short*) 'short' (Donicie and Voorhoeve 1962, p. 93)
1778 *vergêti* (D *vergeet-*) 'to forget' (Donicie and Voorhoeve 1962, p. 32)
1778 *weti* (E *white*) 'white' (Donicie and Voorhoeve 1962, p. 115)

/d/

1778 *bendi* (E *bend*) 'to bend' (Donicie and Voorhoeve 1962, p. 16)
1778 *bladi* (E *broad*) 'broad' (Donicie and Voorhoeve 1962, p. 12)
1778 *bradi* (E *broad*) 'broad' (Donicie and Voorhoeve 1962, p. 12)
1778 *bredi* (E *bread*) 'bread' (Donicie and Voorhoeve 1962, p. 16)
1778 *findi* (D *vind-*) 'to find' (Donicie and Voorhoeve 1962, p. 32)
1778 *fludu* (D *vloed*) 'flood' (Donicie and Voorhoeve 1962, p. 35)
1778 *frédde* (E *afraid*) 'afraid' (Donicie and Voorhoeve 1962, p. 32)
1778 *frudu* (D *vloed*) 'flood' (Donicie and Voorhoeve 1962, p. 35)
1778 *gado* (E *God*) 'God' (Donicie and Voorhoeve 1962, p. 38)

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[2] Where *ü* certainly represents an [i].

[3] This could conceivably be derived etymologically from E *gutter*, via **gotro* and subsequent deletion of /r/, as in *slottro* or *slotto* (D *sleutel*) 'key'. Cf. also Sranan *gotro* 'gutter' (Anon. 1999). However, as shown in chapter **4**, section **4.2.3**, obstruent + liquid onset clusters normally still occur in 1778 Saramaccan.

[4] According to Donicie and Voorhoeve (1962, p. VI), "*sütti* [...] probably represents a transition stage between *suíti* and *súti* (the current form)". See also chapter **3**, section **3.2.9**.

1778 *heddi* (E *head*) 'head' (Donicie and Voorhoeve 1962, p. 45)
1778 *hondi* (E *hunt*) 'to hunt' (Donicie and Voorhoeve 1962, p. 46)
1778 *hudu* (E *wood*) 'wood' (Donicie and Voorhoeve 1962, p. 110)
1778 *sandu* (E *sand*) 'sand' (Donicie and Voorhoeve 1962, p. 93)
1778 *toddo* (E *toad*) 'toad' (Donicie and Voorhoeve 1962, p. 107)

/n/
1778 *bunne* (P *bom*) 'good' (Donicie and Voorhoeve 1962, p. 21)
1778 *plêni* (E *plane*) 'plane; to plane' (Donicie and Voorhoeve 1962, p. 86)
1778 *tchenni* (E *cane*) 'sugar cane' (Donicie and Voorhoeve 1962, p. 106)
1778 *teni* (E *ten*) 'ten' (Donicie and Voorhoeve 1962, p. 104)
1778 *wîni* (E *wine* / D *wijn*) 'wine' (Donicie and Voorhoeve 1962, p. 115)
1778 *winni* (E *win*) 'to win' (Donicie and Voorhoeve 1962, p. 115)
1779 *bunnu* (P *bom*) 'good' (Arends and Perl 1995, p. 270)
1779 *neni* (E *nine*) 'nine' (Arends and Perl 1995, p. 329)

/l/
1778 *bôli* (E *boil*) 'to boil' (Donicie and Voorhoeve 1962, p. 19)
1778 *brali* (E *broad*) 'broad' (Donicie and Voorhoeve 1962, p. 12)
1778 *bráli* (E *broad*) 'broad' (Donicie and Voorhoeve 1962, p. 12)
1778 *fili* (E *feel*) 'to feel' (Donicie and Voorhoeve 1962, p. 33)
1778 *floli* (P *flor*) 'flower' (Donicie and Voorhoeve 1962, p. 35)
1778 *frolo* (D *vloed*) 'flood' (Donicie and Voorhoeve 1962, p. 35)
1778 *holi* (E *hold*) 'to hold' (Donicie and Voorhoeve 1962, p. 46)
1778 *kali* (E *call*) 'to call' (Donicie and Voorhoeve 1962, p. 52)
1778 *killi* (E *kill*) 'to kill' (Donicie and Voorhoeve 1962, p. 56)
1778 *kwêli* (E *square*) 'to hew' (Donicie and Voorhoeve 1962, p. 60)
1778 *pîli* (E *peel*) 'to peel' (Donicie and Voorhoeve 1962, p. 87)
1778 *poli* (E *spoil*) 'to spoil' (Donicie and Voorhoeve 1962, p. 89)
1778 *prolo* (E *proud*) 'proud' (Donicie and Voorhoeve 1962, p. 90)
1778 *pulu* (E *pull*) 'to pull' (Donicie and Voorhoeve 1962, p. 91)
1778 *selli* (E *sell*) 'to sell' (Donicie and Voorhoeve 1962, p. 94)
1778 *smâla* (E *small*) 'small' (Donicie and Voorhoeve 1962, p. 100)
1778 *sweli* (E *swell*) 'to swell' (Donicie and Voorhoeve 1962, p. 98)
1779 *mili* (E *mill*) 'mill' (Arends and Perl 1995, p. 324)

/r/
1778 *dorro* (E *door*) 'door' (Donicie and Voorhoeve 1962, p. 28)
1778 *dorro* (D *door*) 'by' (Donicie and Voorhoeve 1962, p. 29)
1778 *floro* (P *flor*) 'flower' (Donicie and Voorhoeve 1962, p. 35)
1778 *froro* (P *flor*) 'flower' (Donicie and Voorhoeve 1962, p. 35)
1778 *froro* (D *vloed*) 'flood' (Donicie and Voorhoeve 1962, p. 35)
1778 *hammera* (E *hammer*) 'hammer' (Donicie and Voorhoeve 1962, p. 44)
1778 *jara* (D *jaar*) 'year' (Donicie and Voorhoeve 1962, p. 48)
1778 *jari* (D *jaar*) 'year' (Donicie and Voorhoeve 1962, p. 48)
1778 *jeri* (dial. E *year*) 'to hear' (Donicie and Voorhoeve 1962, p. 49)

1778 *juru* (D *uur*) 'hour' (Donicie and Voorhoeve 1962, p. 50)
1778 *juru* (D *hur-*) 'to lend, to hire' (Donicie and Voorhoeve 1962, p. 50)
1778 *kwêri* (E *square*) 'to hew' (Donicie and Voorhoeve 1962, p. 60)
1778 *leri* (D *leer-*) 'to teach' (Donicie and Voorhoeve 1962, p. 64)
1778 *mankeri* (D *mankeer-*) 'to lack' (Donicie and Voorhoeve 1962, p. 70)
1778 *morro* (E *more*) 'more' (Donicie and Voorhoeve 1962, p. 76)
1778 *mujêre* (P *mulher*) 'woman' (Donicie and Voorhoeve 1962, p. 76)
1778 *piri* (E *peel*) 'to peel' (Donicie and Voorhoeve 1962, p. 87)
1778 *plessiri* (D *plezier*) 'pleasure' (Donicie and Voorhoeve 1962, p. 88)
1778 *proro* (E *proud*) 'proud' (Donicie and Voorhoeve 1962, p. 90)
1778 *siri* (E *seed*) 'seed' (Donicie and Voorhoeve 1962, p. 96)
1778 *smêri* (E *smell*) 'to smell' (Donicie and Voorhoeve 1962, p. 100)
1778 *sweri* (E *swear*) 'to swear' (Donicie and Voorhoeve 1962, p. 98)
1778 *tára* (E *tar*) 'tar' (Donicie and Voorhoeve 1962, p. 101)
1778 *tîri* (E *steer*) 'to steer' (Donicie and Voorhoeve 1962, p. 104)
1779 *sorro* (E *sore*) 'sore' (Arends and Perl 1995, p. 350)

/s/
1778 *adjossi* (P *adeus*) 'good-bye' (Donicie and Voorhoeve 1962, p. 2)
1778 *alîsi* (D *rijst*) 'rice' Donicie and Voorhoeve 1962, p. 6)
1778 *bâsi* (D *baas*) 'boss' (Donicie and Voorhoeve 1962, p. 15)
1778 *bossi* (dial. E *buss*) 'to kiss' (Donicie and Voorhoeve 1962, p. 20)
1778 *blasi* (D *blaas*) 'bladder' (Donicie and Voorhoeve 1962, p. 13)
1778 *brasi* (D *blaas*) 'bladder' (Donicie and Voorhoeve 1962, p. 13)
1779 *bleshi* (E *bless*) 'to bless' (Arends and Perl 1995, p. 265)
1779 *brîsi* (E *please*) 'to please' (Arends and Perl 1995, p. 268)
1778 *dissi* (E *this*) 'this' (Donicie and Voorhoeve 1962, p. 25)
1778 *fêsi* (E *face*) 'face' (Donicie and Voorhoeve 1962, p. 32)
1778 *feessi* (E *face*) 'face' (Donicie and Voorhoeve 1962, p. 32)
1778 *fissi* (E *fish*) 'fish' (Donicie and Voorhoeve 1962, p. 34)
1778 *fossu* (E *first*) 'first' (Donicie and Voorhoeve 1962, p. 35)
1778 *hosso* (E *house*) 'house' (Donicie and Voorhoeve 1962, p. 116)
1778 *–grassi* (E *grass*) '-grass' (Donicie and Voorhoeve 1962, p. 38)
1778 *hakkesi* (dial. E *aks*) 'to ask' (Donicie and Voorhoeve 1962, p. 44)
1778 *hansi* (E *ants*) 'ant' (Donicie and Voorhoeve 1962, p. 44)
1779 *hâsi* (E *horse*) 'horse' (Arends and Perl 1995, p. 290)
1778 *hessi* (E *haste*) 'to hurry' (Donicie and Voorhoeve 1962, p. 46)
1778 *hosso* (E *house*) 'house' (Donicie and Voorhoeve 1962, p. 116)
1778 *jammesi* (E *yams*) 'yam' (Donicie and Voorhoeve 1962, p. 80)
1778 *jessi* (E *ears*) 'ear' (Donicie and Voorhoeve 1962, p. 50)
1778 *kissi* (E *catch*) 'to catch' (Donicie and Voorhoeve 1962, p. 57)
1778 *klossu* (E *cloth*) 'cloth; clothes' (Donicie and Voorhoeve 1962, p. 59)
1778 *kossi* (dial. E *cuss*) 'to curse' (Donicie and Voorhoeve 1962, p. 60)
1778 *krassi* (E *scratch*) 'rash' (Donicie and Voorhoeve 1962, p. 51)
1778 *krossu* (E *cloth*) 'cloth; clothes' (Donicie and Voorhoeve 1962, p. 59)
1778 *lâsi* (E *lose*) 'to lose' (Donicie and Voorhoeve 1962, p. 64)

1778 *lêsi* (D *lees-*) 'to read' (Donicie and Voorhoeve 1962, p. 66)
1778 *lussu* (E *loose*) 'to loosen' (Donicie and Voorhoeve 1962, p. 68)
1778 *missi* (E *miss*) 'miss' (Donicie and Voorhoeve 1962, p. 75)
1778 *musse* (E *must*) 'must' (Donicie and Voorhoeve 1962, p. 76)
1778 *mussu* (D *muts*) 'cap' (Donicie and Voorhoeve 1962, p. 76)
1778 *njusu* (E *used*) 'used to' (Donicie and Voorhoeve 1962, p. 81)
1779 *njusu* (E *news*) 'news' (Arends and Perl 1995, p. 330)
1779 *nushu* (E *nose*) 'nose' (Arends and Perl 1995, p. 330)
1778 *nusso* (E *nose*) 'nose' (Donicie and Voorhoeve 1962, p. 81)
1778 *pâsi* (E *path*) 'road' (Donicie and Voorhoeve 1962, p. 85)
1778 *pîsi* (E *piece*) 'piece' (Donicie and Voorhoeve 1962, p. 89)
1778 *posse* (E *post* / D *post*) 'post, pole' (Donicie and Voorhoeve 1962, p. 90)
1778 *pramusse* (E *promise*) 'to promise' (Donicie and Voorhoeve 1962, p. 83)
1778 *sikkisi* (E *six*) 'six' (Donicie and Voorhoeve 1962, p. 96)
1778 *têsi* (E *test*) 'to prove; to test' (Donicie and Voorhoeve 1962, p. 104)
1778 *tjábissi* (E *cabbage*) 'palm cabbage' (Donicie and Voorhoeve 1962, p. 104)
1778 *wassi* (E *wash*) 'to wash' (Donicie and Voorhoeve 1962, p. 114)
1778 *wassi-wassi* (E *wasp*) 'wasp' (Donicie and Voorhoeve 1962, p. 114)

/ʃ/
1779 *tumushi* (E *too much*) 'very much' (Arends and Perl 1995, p. 362)

/k/
1778 *alleki* (E *alike*) 'alike' (Donicie and Voorhoeve 1962, p. VII)
1778 *bakka* (E *back*) 'back' (Donicie and Voorhoeve 1962, p. 13)
1778 *blakka* (E *black*) 'black' (Donicie and Voorhoeve 1962, p. 12)
1778 *brakka* (E *black*) 'black' (Donicie and Voorhoeve 1962, p. 12)
1778 *brokko* (E *broke*) 'to break' (Donicie and Voorhoeve 1962, p. 20)
1779 *dekki* (D *dik*) 'thick' (Arends and Perl 1995, p. 273)
1778 *díki* (E *dig*) 'to dig' (Donicie and Voorhoeve 1962, p. 24)
1778 *dokki* (D *duiken*) 'to dive' (Donicie and Voorhoeve 1962, p. 27)
1778 *fruku* (D *vroeg*) 'early' (Donicie and Voorhoeve 1962, p. 37)
1778 *harka* (E *hark*) 'to listen' (Donicie and Voorhoeve 1962, p. 44)
1778 *huku* (E *hook*/D *hoek* 'corner') 'hook; corner' (Donicie and Voorhoeve 1962, p. 47)
1778 *inki* (E *ink*) 'ink' (Donicie and Voorhoeve 1962, p. 30)
1778 *jakka* (D *jagen*) 'to hunt' (Donicie and Voorhoeve 1962, p. 48)
1778 *kerki* (D *kerk*) 'church' (Donicie and Voorhoeve 1962, p. 56)
1778 *kriki* (E *creek*) 'creek' (Donicie and Voorhoeve 1962, p. 57)
1778 *kuka* (E *cook*) 'cook' (Donicie and Voorhoeve 1962, p. 61)
1778 *liki* (E *like*) 'to like' (Donicie and Voorhoeve 1962, p. VII)
1778 *lukku* (E *look*) 'to look' (Donicie and Voorhoeve 1962, p. 68)
1778 *marka* (E *mark*) 'to measure, to mark' (Donicie and Voorhoeve 1962, p. 68)
1778 *marki* (E *mark*) 'to measure, to mark' (Donicie and Voorhoeve 1962, p. 68)
1778 *nakki* (E *knock*) 'to knock' (Donicie and Voorhoeve 1962, p. 78)
1778 *pikki* (E *speak*) 'to answer' (Donicie and Voorhoeve 1962, p. 88)
1778 *shêki* (E *shake*) 'to shake' (Donicie and Voorhoeve 1962, p. 94)

1778 *siki* (E *sick*) ‘sick’ (Donicie and Voorhoeve 1962, p. 96)
1778 *sneki* (E *snake*) ‘snake’ (Donicie and Voorhoeve 1962, p. 96)
1778 *suku* (D *zoek-*) ‘to look for’ (Donicie and Voorhoeve 1962, p. 100)
1778 *takki* (E *talk*) ‘that (complementizer)’ (Donicie and Voorhoeve 1962, p. 101)
1778 *takki* (E *talk*) ‘to say’ (Donicie and Voorhoeve 1962, p. 101)
1778 *teki* (E *take*) ‘to take’ (Donicie and Voorhoeve 1962, p. 103)
1778 *wakka* (E *walk*) ‘to walk’ (Donicie and Voorhoeve 1962, p. 113)
1778 *weki* (E *wake*) ‘to wake’ (Donicie and Voorhoeve 1962, p. 115)
1778 *werki* (D *werk*) ‘work’ (Donicie and Voorhoeve 1962, p. 114)
1778 *worko* (E *work*) to work’ (Donicie and Voorhoeve 1962, p. 116)
1778 *wrokko* (E *work*) ‘to work’ (Donicie and Voorhoeve 1962, p. 116)
1779 *kakki* (E *cock*) ‘to cock the hammer’ (Arends and Perl 1995, p. 300)

/g/
1778 *bêgi* (E *beg*) ‘to beg’ (Donicie and Voorhoeve 1962, p. 16)
1778 *biggi* (E *big*) ‘big’ (Donicie and Voorhoeve 1962, p. 17)
1779 *dagga* (D *dag*) ‘day’ (Arends and Perl 1995, p. 272)
1779 *dago* (E *dog*) ‘dog’ (Arends and Perl 1995, p. 272)
1778 *djugga* (E *jug*) ‘jug’ (Donicie and Voorhoeve 1962, p. 26)
1779 *fruge* (D *vroeg*) ‘early’ (Arends and Perl 1995, p. 283)
1778 *hagu* (E *hog*) ‘hog’ (Donicie and Voorhoeve 1962, p. 44)
1778 *wegi* (D *weeg-*) ‘to weigh; to estimate’ (Donicie and Voorhoeve 1962, p. 114)

/ŋ/
1778 *drungu* (E *drunk*) ‘drunk’ (Donicie and Voorhoeve 1962, p. 29)
1779 *ganga* (D *gang*) ‘corridor’ (Arends and Perl 1995, p. 285)
1778 *hengi* (E *hang*) ‘to hang’ (Donicie and Voorhoeve 1962, p. 46)
1778 *langa* (E *long*) ‘long’ (Donicie and Voorhoeve 1962, p. 64)
1778 *linga* (E *ring*) ‘ring’ (Donicie and Voorhoeve 1962, p. 66)
1778 *tingi* (E *stink*) ‘to stink’ (Donicie and Voorhoeve 1962, p. 104)
1778 *tongo* (E *tongue*) ‘tongue’ (Donicie and Voorhoeve 1962, p. 108)
1778 *tranga* (E *strong*) ‘strength; strong’ (Donicie and Voorhoeve 1962, p. 101)

Appendix 5: Early Jamaican

/ft/
1862 *lef* (E *left*) ‘to leave’ (McLean 1996, p. 53)
1873 *lef* (E *left*) ‘to leave’ (D’Costa and Lalla 1989, p. 126)

/nt/
1896 *won’* (E *won’t*) ‘won’t’ (McLean 1996, p. 68)

/nd/
1841 *fin’* (E *find*) ‘to find’ (Parkvall and Edlund 1997–1998)
1844 *fren* (E *friend*) ‘friend’ (D’Costa and Lalla 1989, p. 91)

1844 *groun* (E *ground*) 'ground' (D'Costa and Lalla 1989, p. 105)
1844 *kin* (E *kind*) 'kind' (D'Costa and Lalla 1989, p. 101)
1844 *len* (E *lend*) 'to lend' (D'Costa and Lalla 1989, p. 100)
1844 *min* (E *mind*) 'to mind' (D'Costa and Lalla 1989, p. 101)
1844 *mine* (E *mind*) 'to mind' (D'Costa and Lalla 1989, p. 93)
1844 *tan* (E *stand*) 'to stay' (D'Costa and Lalla 1989, p. 107)
1844 *san* (E *sand*) 'sand' (D'Costa and Lalla 1989, p. 111)
1844 *spen* (E *spend*) 'to spend' (D'Costa and Lalla 1989, p. 95)
-1846 *behine* (E *behind*) 'behind' (D'Costa and Lalla 1989, p. 86)
-1846 *mine* (E *mind*) 'to mind' (D'Costa and Lalla 1989, p. 86)
1868 *ban* (E *band*) 'band' (Russell 1868)
1868 *san* (E *sand*) sand' (Russell 1868)
1868 *mine* (E *mind*) 'to mind' (Russell 1868)
1868 *fine* (E *find*) 'to find' (Russell 1868)
1868 *tambran* (E *tamarind*) 'tamarind' (Russell 1868)
1873 *an'* (E *and*) 'and' (McLean 1996, p. 69)
1873 *behin'* (E *behind*) 'behind' (D'Costa and Lalla 1989, p. 127)
1873 *husban'* (E *husband*) 'husband' (D'Costa and Lalla 1989, p. 123)
1873 *len'* (E *lend*) 'to lend' (D'Costa and Lalla 1989, p. 126)
1873 *sen'* (E *send*) 'to send' (D'Costa and Lalla 1989, p. 128)
1873 *soun'* (E *sound*) 'sound' (D'Costa and Lalla 1989, p. 126)
1873 *stan'* (E *stand*) 'to stay' (D'Costa and Lalla 1989, p. 126)
1873 *'tan'* (E *stand*) 'to be' (D'Costa and Lalla 1989, p. 127)
1896 *an'* (E *and*) 'and' (McLean 1996, p. 69)

/ld/
1844 *ole* (E *old*) 'old' (D'Costa and Lalla 1989, p. 93)
1868 *wol* (E *world*) 'world' (Russell 1868)

/rs/
1868 *rassa* (E *arse*) 'arse' (Russell 1868)

/st/
early 19th c. *breakfas'* (E *breakfast*) 'breakfast' (McLean 1996, p. 54)
1823 *fas* (E *fast*) 'fast' (D'Costa and Lalla 1989, p. 41)
1834 *fis* (E *fist*) 'fist' (D'Costa and Lalla 1989, p. 47)
1844 *dis* (E *just*) 'just' (D'Costa and Lalla 1989, p. 108)
1844 *jis* (E *just*) 'just' (D'Costa and Lalla 1989, p. 108)
1844 *mus* (E *must*) 'must' (D'Costa and Lalla 1989, p. 91)
1844 *res* (E *rest*) 'rest' (D'Costa and Lalla 1989, p. 89)
1844 *pass* (E *past*) 'past' (D'Costa and Lalla 1989, p. 89)
-1864 *las* (E *last*) 'last' (D'Costa and Lalla 1989, p. 114)
-1864 *mus* (E *must*) 'must' (D'Costa and Lalla 1989, p. 120)
-1864 *truss* (E *trust*) 'trust' (D'Costa and Lalla 1989, p. 89)
1868 *Agas* (E *August*) 'August' (Russell 1868)
1868 *brok-fuss* (E *breakfast*) 'breakfast' (Russell 1868)

1868 *fis* (E *fist*) 'fist' (Russell 1868)
1868 *jis* (E *just*) 'just' (Russell 1868)
1868 *las* (E *last*) 'last' (Russell 1868)
1868 *mus* (E *must*) 'must' (Russell 1868)
1868 *sweetis* (E *sweetest*) 'sweetest' (Russell 1868)
1868 *wris* (E *wrist*) 'wrist' (Russell 1868)
1873 *bes'* (E *best*) 'best' (D'Costa and Lalla 1989, p. 123)
1873 *breakfas'* (E *breakfast*) 'breakfast' (D'Costa and Lalla 1989, p. 126)
1873 *ches* (E *chest*) 'chest' (D'Costa and Lalla 1989, p. 126)
1873 *jus'* (E *just*) 'just' (D'Costa and Lalla 1989, p. 124)
1873 *las'* (E *last*) 'last' (D'Costa and Lalla 1989, p. 127)
1873 *mus'* (E *must*) 'must' (D'Costa and Lalla 1989, p. 123)

/t/
1834 *whara* (E *what*) 'what' (D'Costa and Lalla 1989, p. 72)
1837 *warra* (E *what*) 'what' (McLean 1996, p. p. 49)
1844 *warra* (E *what*) 'what' (D'Costa and Lalla 1989, p. 101)
1868 *whity* (E *white*) 'white' (Russell 1868)

/d/
1788 *deadee* (E *dead*) 'to die; dead' (D'Costa and Lalla 1989, p. 36)

/n/
1912 /uona/ (E *own*) 'own' (Cassidy 1961, p. 47)

/r/
-1822 *yeerie* (dial E *year*) 'to hear' (D'Costa and Lalla 1989, p. 52)
1831 *hearey* (E *hear*) 'to hear' (D'Costa and Lalla 1989, p. 58)
1831 *hearee* (E *hear*) 'to hear' (D'Costa and Lalla 1989, p. 59)
1844 *hearee* (E *hear*) 'to hear' (D'Costa and Lalla 1989, p. 109)
1844 *yeri* (dial E *year*) 'to hear' (D'Costa and Lalla 1989, p. 107)
1844 *yerry* (dial E *year*) 'to hear' (D'Costa and Lalla 1989, p. 93)
-1864 *hearee* (E *hear*) 'to hear' (D'Costa and Lalla 1989, p. 122)
1873 *yerry* (dial E *year*) 'to hear' (D'Costa and Lalla 1989, p. 126)
1890 *yearre* (dial E *year*) 'to hear' (McLean 1996, p. 57)

/k/
1868 *blacky* (E *black*) 'black' (Russell 1868)
1868 *sicky* (E *sick*) 'sick' (Russell 1868)
pre-1900 *lak-a* (E *like*) 'like, as' (Lalla 1986, p. 127)

Appendix 6: Modern Pidgin Proper (Nigerian Pidgin English)

/t/
gɛti (E *get*) 'to get' (Agheyisi 1984, p. 227)

/s/
disi (E *disi*) 'this' (Agheyisi 1984, p. 216)

/k/
laki (E *like*) 'to like' (Agheyisi 1984, p. 227)
siki (E *sick*) 'sick' (Agheyisi 1984, p. 227)

/g/
lɛgi (E *leg*) 'to leg' (Agheyisi 1984, p. 227)

Appendix 7: Modern Yoruba Nigerian Pidgin English

/nd/
/han/ (E *hand*) 'hand' (Barbag-Stoll 1983, p. 62)
hosban (E *husband*) 'husband' (Barbag-Stoll 1983, p. 62)
/san/ (E *sand*) 'sand' (Barbag-Stoll 1983, p. 62)
/sen/ (E *send*) 'to send' (Barbag-Stoll 1983, p. 62)

/ld/
/ol/ (E *old*) 'old' (Barbag-Stoll 1983, p. 62)

/t/
/biti/ (E *biti*) 'to bite' (Barbag-Stoll 1983, p. 66)
/kɔtu/ (E *coat*) 'coat' (Barbag-Stoll 1983, p. 66)
/rati/ (E *rati*) 'rat' (Bar bag-Stoll 1983, p. 66)
/risiti/ (E *receipt*) 'receipt' (Barbag-Stoll 1983, p. 65)
/witi/ (E *with*) 'with' (Barbag-Stoll 1983, p. 66)

/d/
/bredi/ (E *bread*) 'bread' (Barbag-Stoll 1983, p. 66)
/gladi/ (E *glad*) 'glad' (Barbag-Stoll 1983, p. 66)
/gudu/ (E *good*) 'good' (Barbag-Stoll 1983, p. 66)

/ʤ/
/ʧenʤi/ (E *change*) 'change' (Barbag-Stoll 1983, p. 66)

/k/
/buku/ (E *book*) 'book' (Barbag-Stoll 1983, p. 66)
/kiki/ (E *kick*) 'to kick' (Barbag-Stoll 1983, p. 66)

/kwiki/ (E *quick*) 'quick' (Barbag-Stoll 1983, p. 66)
/miuziki/ (E *music*) 'music' (Barbag-Stoll 1983, p. 66)
/sumɔki/ (E *smoke*) 'smoke' (Barbag-Stoll 1983, p. 66)
/stiki/ (E *stick*) 'stick' (Barbag-Stoll 1983, p. 66)

Appendix 8: Early Tok Pisin

/ft/
1943 *lep-* (E *left*) 'left' (Murphy 1966, p. 79)

/ld/
1943 *kol* (E *cold*) 'cold' (Murphy 1966, p. 76)
1943 *ol* (E *old*) 'old' (Hall 1943, p. 111)
1943 *wajl* (E *wild*) 'wild' (Hall 1943, p. 123)

/nt/
1943 *pɔjn* (E *point*) 'point' (Hall 1943, p. 114)
1943 *simen* (E *cement*) 'cement' (Murphy 1966, p. 93)

/nd/
1943 *giraun* (E *ground*) 'ground' (Murphy 1966, p. 67)
1943 *han* (E *hand*) 'hand' (Murphy 1966, p. 69)
1943 *-kain* (E *kind*) 'kind' (Murphy 1966, p. 74)
1943 *læn* (E *land*) 'land' (Hall 1943, p. 106)
1943 *nεvamajn* (E *never mind*) 'never mind' (Hall 1943, p. 110)
1943 *pawn* (E *pound*) 'pound' (Hall 1943, p. 112)
1943 *pren* (E *friend*) 'friend' (Murphy 1966, p. 88)
1943 *raun* (E *round*) 'round' (Murphy 1966, p. 90)
1943 *win* (E *wind*) 'wind' (Murphy 1966, p. 102)

/ns/
1943 *lenis* (E *lance*) 'lance' (Murphy 1966, p. 79)

/st/
1943 *hais* (E *hoist*) 'to lift' (Murphy 1966, p. 68)
1943 *is* (E *yeast*) 'yeast' (Murphy 1966, p. 71)
1943 *is* (E *east*) 'east' (Hall 1943, p. 101)
1943 *las* (E *last*) 'in gambling, a last chance' Murphy (1966, p. 79)
1943 *mas* (E *mast*) 'mast' (Murphy 1966, p. 82)
1943 *nεs* (E *nest*) 'nest' (Hall 1943, p. 110)
1943 ɔgəs (E *August*) 'August' (Hall 1943, p. 112)
1943 *pas* (E *fast*) 'fast' (Murphy 1966, p. 86)
1943 *pos* (E *post*) 'post, upright pole' (Murphy 1966, p. 88)
1943 *ros* (G *Rost*) 'rust' (Murphy 1966, p. 90)

/ks/
1943 *ækis* (E *axe*) 'axe' (Hall 1943, p. 15)
1943 *bokis* (E *box*) 'box' (Murphy 1966, p. 63)
1943 *sikis-* (E *six*) 'six' (Murphy 1966, p. 93)
1943 *takis* (E *tax*) 'tax' (Murphy 1966, p. 97)

Appendix 9: Early Bislama

/nt/
1914 *coun* (E *count*) 'count' (Crowley 1998, p. 81)

/nd/
1899 *graoune* (E *graound*) 'ground' (Crowley 1993, p. 218)
-1899 *sane* (E *sand*) 'sand' (Crowley 1993, p. 94)
-1899 *ouine* (E *wind*) 'wind' (Crowley 1998, p. 104)
-1934 *fainim* (E *find, him*) 'to find' (Crowley 1998, p. 74)

/ns/
-1934 *danis* (E *dance*) 'dance' (Crowley 1993, p. 72)

/st/
-1899 *mèkpas* (E *make, fast*) 'fasten' (Crowley (1993, p. 212)

/ks/
-1899 *sikis* (E *six*) 'six' (Crowley 1998, p. 96)
1912 *ackis* (E *axe*) 'axe' (Crowley 1998, p. 67)
1912 *bokkis* (E *box*) 'box' (Crowley 1998, p. 70)
-1917 *ackus* (E *axe*) 'axe' (Crowley 1998, p. 67)
-1917 *bokkus* (E *box*) 'box' (Crowley 1998, p. 70)
-1927 *akus* (E *axe*) 'axe' (Crowley 1998, p. 67)

Appendix 10: Early Solomon Islands Pidgin English

/p/
isitapu (E *stop*) 'to stay' (Jourdan and Keesing 1997, p. 409)
koafu (E *go up*) 'to climb' (Keesing 1991b, p. 333)
robu (E *rope*) 'rope' (Keesing 1991b, p. 333)

/m/
kamu (E *come*) 'to come' (Keesing 1991b, p. 324)
sut-imu (E *shoot, him*) 'to shoot' (Jourdan and Keesing 1997, p. 407)

/t/
waete- (E *white*) ‘white’ (Keesing 1991b, p. 331)

/l/
solodia (E *soldier*) ‘policeman’ (Jourdan and Keesing 1997, p. 406)
solowata (E *salt*, *water*) ‘sea’ (Jourdan and Keesing 1997, p. 409)
sukulu (E *school*) ‘school’ (Jourdan and Keesing 1997, p. 409)
tale (E *tell*) ‘to say, to tell’ (Keesing 1991b, p. 332)

/n/
taone (E *town*) ‘town’ (Mühlhäusler 1987, p. 117)

/k/
gobeke (E *go back*) ‘to return’ (Jourdan and Keesing 1997, p. 406)
meke- (E *make*) ‘to make’ (Keesing 1991b, p. 323)
seke (E *check*) ‘to check’ (Keesing 1991b, p. 323)
teke- (E *take*) ‘take’ (Keesing 1991b, p. 324)

/ŋ/
banga (E *bang*) ‘to bang’ (Jourdan and Keesing 1997, p. 405)
bilongo (E *belong*) ‘of’ (Jourdan and Keesing 1997, p. 406)