CHAPTER 2

DISCONTINUOUS MORPHEMES IN JERIGONZA

2.0 Introduction

Jerigonza is a speech disguise in Spanish. It is used by young people in the Spanish speaking world in order to procure private communication between them, for the purpose of concealment or simply for entertainment.

(1) Spanish:

Quiero que Pablo y María vengan a la fiesta esta noche, pero no quiero que sus amigos se aparezcan con ellos.

Jerigonza: (in Spanish orthography)

Quieperopo quepe Papablopo ypi Maparipiapa vempegampa apa lapa fiespetapa espetapa nopochepe peperopo nopo quieperopo quepe suspu apamipigospo sepe aparezpecampa compo epellospo.

'I want Paul and Mary to come to the party tonight, but I don't want their friends to show up with them'

There exist different versions of this language game. In all versions, however, words are generated by adding an epenthetic CV-syllable for every syllable in the source form. The data in (1) are representative of a variety of Jerigonza spoken in Colombia. In this version, the epenthetic syllable is placed immediately to the right of every syllable boundary, C is usually the segment /p/ and V is a copy of the preceding syllable nucleus. This is illustrated below for the example *quie.pe.ro.po* < *quie.ro* 'I want'.

(2) qu i e . r o — Source form

qu i e . p e . r o . p o — New output

Known as speech disguises, secret languages, play languages or language games, linguistic systems like Jerigonza are alternate languages that exist alongside natural languages (Bagemihl, 1988). Common to all alternate languages is the property of manipulating the linguistic structure of a natural language in some way. The term LUDLING was coined by Laycock (1972) in order to refer to such systems.

(3) <u>Definition of Ludlings</u>:

"A ludling is […] the result of a transformation or series of transformations acting regularly on an ordinary language text, with the intent of altering the form but not the content of the original message, for purposes of concealment or comic effect. (Laycock 1972: 61).

In this chapter, I argue that Jerigonza is an infixing ludling that manipulates the morpho-phonological structure of Spanish. Jerigonza acts on Spanish to create a uniform prosodic structure: a prosodic word built on a series of disyllabic feet, $[\ (\sigma\sigma)^n\ ]_{PWd}$. I argue that the reason why uniform disyllabic footing arises is because the leftmost and/or rightmost segment of every syllable in the source form is required to correspond to the leftmost and/or rightmost element of a binary foot in Jerigonza. Epenthetic syllables are added to help form binary feet that make this anchoring possible. Epenthesis, however, also causes some segments that are contiguous in the source form to have non-contiguous output correspondents. An important restriction on epenthetic syllables is that they may not appear in the prominent position of the foot. This is a consequence of the fact that the projection of prosodic heads is dependent on the source form. Only those syllables that have correspondents in the source form may be foot heads. In short, Jerigonza is a case of phonologically-driven morphology where the segments that constitute the exponence of a morpheme are forced to appear discontinuously so that a uniform foot structure is met.

The organization of this chapter is as follows. Section 2.1 contextualizes Jerigonza within the frame of linguistic systems. Section 2.2 reviews an autosegmental analysis proposed by Bagemihl (1988) to account for a Tigrinya ludling of the same type as Jerigonza. Section 2.3 evaluates this proposal. Section 2.4 discusses the properties of the three varieties of Jerigonza I have identified. In section 2.5, I propose an analysis of these data based on prosodic constraints. Section 2.6 summarizes the findings.

2.1 Characterizing ludlings

Bagemihl (1988) devotes his entire dissertation to the study of alternate linguistic systems. He proposes a typology of languages based on several linguistic domains: Syntax, Lexicon, Morphology and Phonology.[1] Languages may be compared to one another according to these components. A language L_1 is different from a language L_2

[1] Bagemihl (1988) also includes a Modality domain, which refers to the type of channels used in the expression of language (e.g. articulatory-auditory vs. manual-visual). Since this domain is not relevant for the purposes here, it will be disregarded.

when they differ in any of these domains. Spanish, for example, is extremely different from Chinese because these two languages differ in all of their components.

(4) <u>Two Separate Linguistic Systems</u>: (Based on Bagemihl, 1988)

L_1	L_2
Syntax$_1$	Syntax$_2$
|	|
Lexicon$_1$	Lexicon$_2$
|	|
Morphology$_1$	Morphology$_2$
|	|
Phonology$_1$	Phonology$_2$

The scheme in (4) corresponds to the relationship between two SEPARATE LANGUAGES, which do not have any of their domains in common. But certain linguistic systems may share one or more domains. The more domains two linguistic systems have in common, the more closely related they are. Such is the case of ALTERNATE LANGUAGES. Under this category, Bagemihl groups linguistic systems that always feed on the Syntax domain of a Separate Language and which may additionally use one or more of the remaining domains (e.g. Lexicon, Morphology and Phonology). Alternate Languages are then 'parasitic' linguistic systems that feed on the linguistic structure of a Separate Language. Alternate Languages are not identical to their host Separate Languages because they diverge from them by having one or more alternate domains.

Of special interest to the current research on Jerigonza is a subcategory of Alternate Languages known as LUDLINGS. Bagemihl (1988) redefines the concept of ludling. He proposes to characterize ludlings as linguistic systems that utilize 'various forms of non-concatenative (and occasionally concatenative) morphological manipulation'. A ludling shares with its host Separate Language every one of its linguistic domains except for the Morphology domain, for which it has an alternate one.

(5) A Ludling with its Host Language: (Based on Bagemihl, 1988)

$$
\begin{array}{lcl}
L_1 / L_2 & & \\
\text{Syntax}_{1,2} & & \\
\quad | & & \\
\text{Lexicon}_{1,2} & & \\
\quad | & & \\
\text{Morphology}_1 & \text{---} & \text{Morphology}_2 \\
\quad | & & \\
\text{Phonology}_{1,2} & &
\end{array}
$$

The scheme in (5) illustrates the dependence relationship of an Alternate Language with respect to a Separate Language. This diagram may then represent the relationship between Jerigonza, L_2, and Spanish, L_1. Jerigonza coexists with Spanish and shares all of its linguistic structure except for the Morphology. But even the Morphology of L_2 depends on L_1 since Morphology$_2$ is derived from Morphology$_1$. The relationship between Spanish and Jerigonza is then one of proper inclusion such that Jerigonza may not exist without a Spanish source form.

2.2 Jerigonza as infixing morphology

Bagemihl (1988) subdivides ludlings in three broad categories. (i) In TEMPLATIC LUDLINGS the segmental string of a source form provided by a Separate Language is mapped onto a partially-specified skeletal template imposed by the ludling morphology. This type of ludling constitutes the alternate-morphology counterpart of root-and-pattern morphology found in certain Separate Languages (e.g. Arabic), as noted by McCarthy

(1981, 1985). Instances of this type of ludling occur in Amharic, Canadian Unuit, etc. (ii) In REVERSING LUDLINGS or backwards languages, different kinds of reversals operating on segments or prosodic units may occur. This type of alternate morphology violates a constraint that holds strong in regular phonology: the prohibition against crossing of association lines in phonological representations. Instances of Reversing Ludlings occur in Tagalog, Javanese, Hanunoo, etc. For an account of Reversing Ludlings within Optimality Theory see Itô, Kitagawa and Mester 1996, who study a Japanese argot. (iii) The last category is labeled INFIXING LUDLINGS. This type is characterized by the fact that a fully or partially specified sequence of segments is introduced within the melodic string of a source form. This epenthetic material resembles an infixing morpheme but it is semantically void. Jerigonza belongs to this category.

2.2.1 Infixation and spreading

Bagemihl (1988) develops an autosegmental analysis for an Infixing Ludling that occurs in Tigrinya (6), a Semitic language spoken in Eritrea. This ludling bears a striking resemblance with a variety of Jerigonza spoken in Costa Rica (7). The only aspect in which the Tigrinya ludling differs from Costa Rican Jerigonza is that the consonantal segment of the infix is /g/ instead of /p/. (Epenthetic material appears underlined)

(6) <u>Infixing Ludling in Tigrinya</u>: (Bagemihl, 1988: 243)

a.	s′aħifu	s′a<u>ga</u>ħi<u>gi</u>fu<u>gu</u>	‘he wrote’
	bi≠′a	bi<u>gi</u>≠′a<u>ga</u>	‘yellow’
b.	ʔintay	ʔi<u>gi</u>nta<u>ga</u>y	‘what’
	k′arma	k′a<u>ga</u>rma<u>ga</u>	‘gnat’

(7) Infixing Ludling in Spanish: (Costa Rican Jerigonza)

a.	libro	lipibropo	'book'
	cadena	capadepenapa	'chain'
b.	puerta	puepertapa	'door'
	alfombra	apalfopombrapa	'carpet'

The examples in (6a) and (7a) contain open syllables only. Those in (6b) and (7b) include closed syllables. The latter show that, when the syllable is closed, the infix separates the syllable coda from the rest of the syllable. In order to account for the data in (6), Bagemihl proposes an autosegmental analysis that requires two rules. One of them is an epenthesis rule that introduces two skeletal slots immediately after every syllable head. This rule needs apply after syllabification, once syllable heads have been projected.

(8) Epenthesis in an Infixing Ludling: (Bagemihl, 1988:247)

$$\varnothing \rightarrow \begin{array}{c} X \\ | \\ g \end{array} \; \underline{X} \; / \; \underline{X} \; \_\_\_$$

The first of these slots is pre-specified with all of the features of the segment /g/, whereas the second one is unspecified except for the feature [+syllabic], which is encoded in the diacritic $\underline{X}$ = syllable head. The second rule Bagemihl needs to account for (6) corresponds to a spreading process.

(9) Spreading in an Infixing Ludling: (Bagemihl, 1988: 247)

$$\begin{array}{cc} \underline{X} & \underline{X} \\ | & \\ [\alpha F] & \end{array}$$

The features of the vowel preceding the unspecified $\underline{X}$-slot spread rightward in order to provide the void slot with the features it needs to be phonetically realized. For this to be possible, Bagemihl needs assume that the infixed consonant occupies a different plane so that it does not block spreading. With the minor adjustment of pre-specifying the features of /p/ instead of /g/, these two rules would also account for the Spanish data in (7). The following derivation illustrates the application of these rules to the Spanish word *puerta* 'door'.

(10) p u e r t a — Input

p u e r t a
[X X $\underline{X}$ X][X $\underline{X}$] — Syllabification

p u e r t a
[X X $\underline{X}$ X $\underline{X}$ X][X $\underline{X}$] X $\underline{X}$ — Rule (8)
p p

p u e r t a
[X X $\underline{X}$ X $\underline{X}$ X][X $\underline{X}$] X $\underline{X}$ — Rule (9)
p p

p u e r t a
[X X $\underline{X}$] [X $\underline{X}$ X][X $\underline{X}$][X $\underline{X}$] — Syllabification
p p

2.2.2 Objections against the infixation/spreading analysis

It is true that rules (8) and (9) are capable of generating all of the ludling data from Tigrinya and Costa Rican Spanish. Nonetheless, there are several issues that need be addressed. I argue that the formalization of the process as in (8) and (9) is not satisfactory for several reasons. First, the fact that rule (8) introduces two skeletal positions is inconsistent with the general dictum that a rule implements a single operation. This objection could be answered by formulating two epenthesis rules: one that inserts a consonant and another one that inserts a vowel.

(11) Two epenthesis rules:

$\varnothing \quad \rightarrow \quad X \;/\; \underline{X} \;\_\_\_\_$

$\varnothing \quad \rightarrow \quad \underline{X} \;/\; X' \;\_\_\_\_$

However, the crucial point is that, neither rule (8) nor the two rules in (11) take into account that the inserted sequence [X <u>X</u>] is equivalent to a prosodic constituent. A better alternative would then be to reformulate the process as insertion of a syllable node.

(12) $\varnothing \quad \rightarrow \quad \sigma$

However, given that the epenthetic syllable is sometimes inserted within a syllable (e.g. *ma<u>pa</u>r* < *mar* 'sea'), the context of epenthesis may not be defined on the same tier. This is why Bagemihl had to refer to the skeletal tier, where epenthesis involves two rather than one element. But if the context is defined on the skeletal tier, the syllable node would then be inserted on that tier for it is there where the ____ is (see 13). It would be rather bizarre that an empty spot on the skeletal tier could turn into a unit of the syllable tier.

(13) $\varnothing \rightarrow \sigma \; / \; \underset{\underline{X}}{\overset{\sigma}{|}} \; \_\_\_\_$

The need to segregate morphemes is another weakness of this account. The only reason to assume that the infix occupies a different plane is to keep it from blocking spreading when rule (9) applies. The representation in (14) illustrates how spreading is blocked if the infixed consonant is allowed to appear on the same melodic tier.

(14) <u>Blocking of spreading</u>:

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 p  u  e  p       r  t  a  p
 |  |  |\ |       |  |  |\ |
[X X  X  X  X   X][X X] X  X          Rule (9) fails
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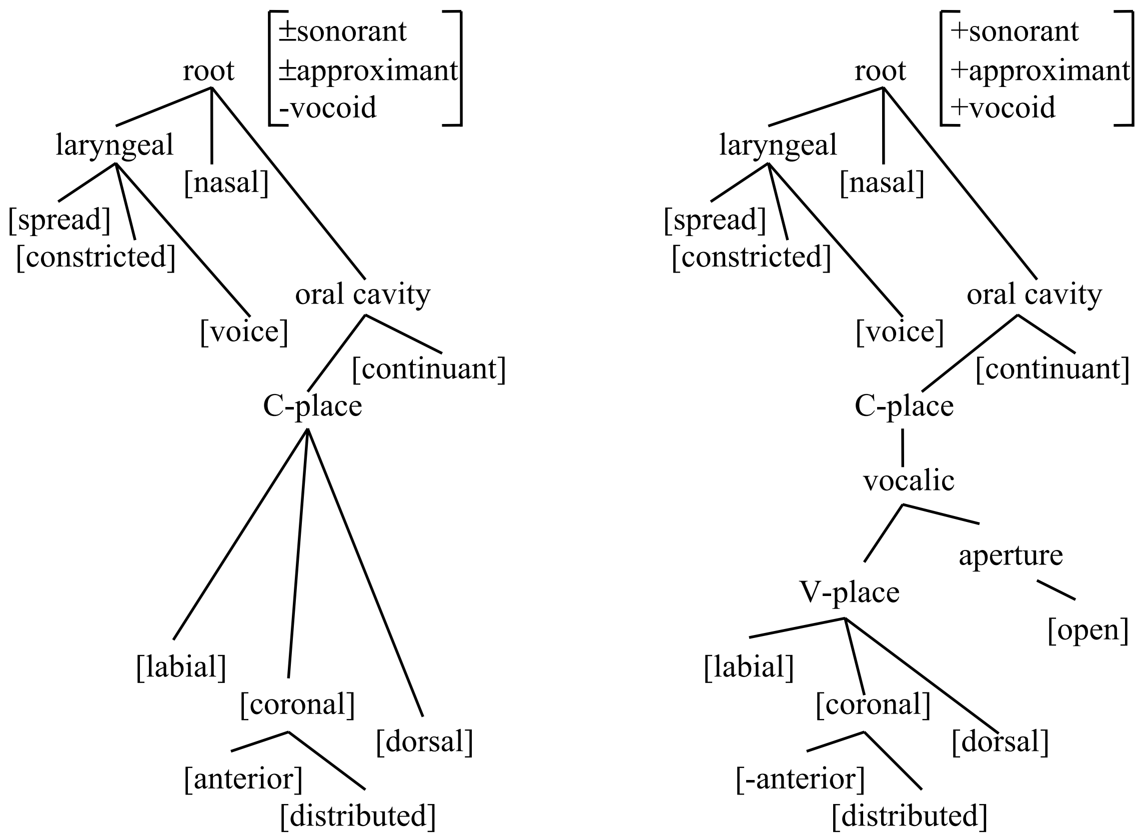
Assuming that there is morpheme segregation in Spanish and Tigrinya only to avoid this blocking is a very costly solution given that there is no independent evidence to support it. A more viable alternative is available within a Feature Geometry Theory such as Clements and Hume (1995). The infixed consonant would not block spreading if the process is assumed to take place at a level of structure where consonants are transparent. The spreading process in (9) may be more accurately formulated as spreading of the Vocalic node, which is the node that subsumes all of the place and aperture features of vocoids. According to Clements and Hume's model (see 15 below), the Vocalic node is a dependent of the C-place node, which in turn depends on the Oral Cavity node. The latter is directly linked to the Root node, which subsumes all segmental features. One of the reasons why spreading of vocalic features in the Spanish and Tigrinya ludlings must occur at the Vocalic-node level is because the epenthetic vowel acquires all of the place and aperture features of the preceding vowel. By formulating this vowel-copy process as spreading of the Vocalic node, only one spreading operation is necessary instead of several ones, as it would be required if spreading were assumed to take place at a level lower than the Vocalic node.

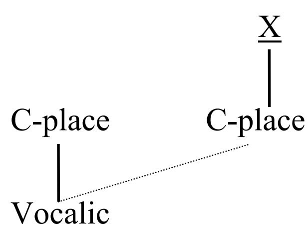
(15) <u>Feature Geometry</u>: (Clements and Hume, 1995: 292)

a. Consonants b. Vocoids



The other reason why spreading must occur at the level of the Vocalic node has to do with a salient difference in the featural architecture of consonants and vocoids. Due to the fact that simplex consonants lack the Vocalic node that vocoids have, spreading of the Vocalic node across simplex consonants is expected to occur unproblematically.[2] Simplex consonants may not block spreading of the Vocalic node because they do not have a Vocalic node. However, simplex consonants may block any spreading process between two vocoids that occurs at a level higher than the Vocalic node because, above this point, consonants have the same structure vocoids have. Therefore, a prediction made by this model is that the highest node that may spread from one vocoid to another, across a simplex consonant, is the Vocalic node. Rule (16) exploits this possibility to achieve a more accurate formalization of the spreading process than rule (9). By operating at a sub-root level, it manages to rid the analysis of the need to stipulate morpheme segregation.

(16)



But even after incorporating these partial solutions a major objection to this analysis remains. Rules (11) and (16) still do not explain why this epenthesis process should occur. They describe a way in which the process might be taking place but they do not reveal the reason for it. Why should Jerigonza words contain twice as many syllables as their source form? I propose a solution that focuses on a level of prosodic

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[2] A simplex consonant is one that has a single place feature (e.g. [labial] for /p/, [coronal] for /t/, etc.), which is dominated by the C-place node. A complex consonant is one that has two place features (e.g. [dorsal] and [labial] for $/g^w/$); one of them dominated by the C-place node (e.g. the main articulation) and the other one by the V-place node (e.g. the secondary articulation).

structure higher than the syllable. When foot structure is taken into account, the actual cause of epenthesis in Infixing Ludlings is revealed.

2.3 The properties of Jerigonza

One may find different varieties of Jerigonza throughout the Spanish speaking world. Among speakers from Colombia, Costa Rica, Peru and Spain, I have been able to identify three of them. Considering all the dialectal variation of Spanish, it would not be surprising if additional varieties were identified by subsequent research. In any event, the three varieties included in the corpus of data for this chapter offer an ample range of patterns in order to capture the generalizations on which the language game operates. The following data are representative of these three types of Jerigonza.

(17) a. Colombian Jerigonza: (JER-1)

Source Form	New Output	Gloss
can.ción	càm.pa.cióm.po	'song'
ma.és.tro	mà.pa.ès.pe.tró.po	'teacher'
pájaro	pà.pa.jà.pa.ró.po	'bird'

b. Peruvian Jerigonza:[3] (JER-2)

can.ción	cha.càn.cha.ción
ma.és.tro	cha.mà.cha.ès.cha.tró
pájaro	cha.pà.cha.jà.cha.ró

c. Costa Rican Jerigonza: (JER-3)

can.ción	cà.pan.ció.pon
ma.és.tro	mà.pa.è.pes.tró.po
pájaro	pà.pa.jà.pa.ró.po

[3] Orthographic *ch* stands for /≠/.

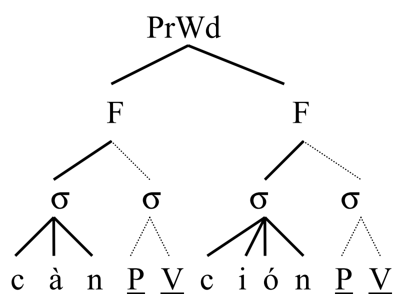
The formation of Jerigonza words constitutes a highly productive process. Absolutely every Spanish word, including function words, may be converted into Jerigonza, regardless the number of syllables or the stress pattern of the source form. The most evident feature of Jerigonza is lengthening. Through epenthesis, every Jerigonza word doubles the number of syllables of the source form. In JER-1, the locus of epenthesis is immediately to the right of every syllable boundary. In JER-2 epenthesis occurs immediately to the left of every syllable boundary and, in JER-3, the epenthetic syllable is placed immediately to the right of every syllable head. There is also variation on the segments that may form the epenthetic syllable. The nucleus of the epenthetic syllable may be any of the Spanish vowels: /a/, /e/, /i/, /o/, /u/, which may result from epenthesis or vowel copying. Several consonants may appear as the syllable onset, but they constitute a limited set: the voiceless stops /p/, /t/, /k/ and the affricate /≠/.[4] To include all these possibilities, I will use *PV* as an archi-form that subsumes all the realizations of the epenthetic syllable. So for instance, for the source form *canción* 'song', the possible Jerigonza forms are:

(18)	(i)	càn.PV.ción.PV	JER-1
	(ii)	PV.càn.PV.ción	JER-2
	(iii)	cà.PVn.ció.PVn	JER-3

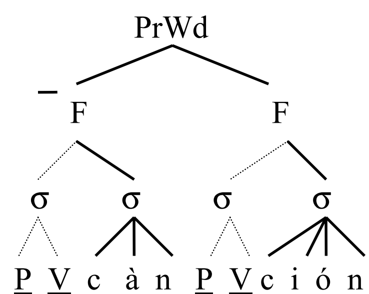
[4] The selection of the onset of the epenthetic syllable among the set /p, t, k, ≠/ is an unpredictable decision speakers make on the spur of the moment. At the beginning of the game, speakers may decide which one of these consonants they are going to use or they may stop the game to change the consonant later on. However, the fact that the onset of the epenthetic syllable may only be one of these segments does depend on linguistic factors that I will expose below.

These three patterns include all the prosodic properties of the language game. The main-stressed foot is always word-final as indicated by the location of primary stress, which always falls on either the penultimate or the ultimate syllable: [… ($\acute{\sigma}$ σ)]$_{\text{PWd}}$ or [… (σ $\acute{\sigma}$)]$_{\text{PWd}}$. This depends on whether feet are left-headed (e.g. JER-1 and JER-3) or right-headed (e.g. JER-2). All syllables are exhaustively parsed into disyllabic feet as evinced by the fact that every other syllable to the left of the main-stressed syllable bears secondary stress (e.g. [(mà.PV)(ès.PV)(tró.PV)] or [(PV.mà)(PV.ès)(PV.tró)] < maéstro). Feet are quantity-insensitive, which means that coda segments do not count for weight. Consequently, every foot must be disyllabic in order to be binary. The representations in (19) below illustrate this prosodic traits of Jerigonza. Note how every epenthetic PV-syllable serves as a filler that completes a disyllabic foot.

(19) a. <u>Trochaic foot parsing</u>:



b. <u>Iambic foot parsing</u>:



For this uniform foot structure to arise, several prosodic constraints must be at work. Exhaustive syllable parsing is demanded by PARSE-SYLL (McCarthy and Prince 1993b); binarity within the foot is required by FOOT-BIN (Prince 1980, McCarthy and

Prince 1986, 1991, 1993b); and the position of the main-stressed foot is determined by ALIGN-HEAD (McCarthy and Prince, 1993b).

(20) PARSE-SYLL: *Parse Syllables*
All syllables must be parsed by feet.

(21) FOOT-BIN(σσ): *Syllabic Foot Binarity*
Feet are binary under syllabic analysis.

(22) ALIGN-HEAD-R: *Align the Head of the PWd Right*
Align the right edge of the main-stressed foot with the right edge of the PWd.

The data from all three varieties of Jerigonza indicate that FOOT-BIN(σσ), PARSE-SYLL and ALIGN-HEAD-R are unviolated. This means that they are top-ranking constraints that take precedence over any other. It should be noted that satisfaction of FOOT-BIN(σσ) and PARSE-SYLL requires that the optimal form contain an even number of syllables.

(23) FOOT-BIN(σσ), PARSE-SYLL, ALIGN-HEAD-R

SF		FOOT-BIN(σσ)	PARSE-SYLL	ALIGN-HEAD-R
a.	[σ (σ́σ)]		* !	
b.	[(σ̀)(σ́σ)]	* !		
c.	[(σ́σσ)]	* !		
d.	[(σ́ σ)(σ̀σ)]			* !
e. ☞	[(σ̀σ)(σ́σ)]			

All candidates that contain an odd number of syllables can not help falling in violation of PARSE-SYLL or FOOT-BIN(σσ) since the odd syllable would be either unparsed (23a) or parsed by a non-binary foot (23b,c). Also, the main-stressed foot of the optimal Jerigonza form must be in word-final position. Otherwise, a violation of ALIGN-HEAD-R would arise (23d). Only a form that satisfies these three undominated prosodic constraints may be a well-formed Jerigonza item (23e).

2.4 Jerigonza as an instance of phonologically-conditioned morphology

Assuming that there is an output-to-output correspondence relationship that holds between a Source Form (SF) and Jerigonza (J), identity between SF and J is enforced by correspondence constraints. This kind of constraint serves to evaluate the identity between correspondent elements. For instance, MAX(SF-J) and DEP(SF-J) govern the identity between SF and J in terms of the number of correspondents.

(24) MAX(SF-J): *Maximization of the Source Form*
Every element in the source form (SF) has a correspondent in Jerigonza (J).

(25) DEP(SF-J): *Dependence on the Source Form*
Every element in Jerigonza (J) has a correspondent in the Source Form (SF).

For every element in SF that lacks a correspondent in J, a violation of MAX(SF-J) is counted. Similarly, every element in J lacking a correspondent in SF constitutes a violation of DEP(SF-J). Given that there are different kinds of correspondent elements (e.g. segments, morae, syllables, etc.), these correspondence constraints may have different versions. MAX(SF-J, σ) and DEP(SF-J, σ), for example, evaluate the identity between SF and J in terms of the number of syllables.

(26) MAX(SF-J, σ): *Syllabic Maximization of the Source Form*

Every syllable in the source form (SF) has a correspondent in Jerigonza (J).

(27) DEP(SF-J, σ): *Syllabic Dependence on the Source Form*

Every syllable in Jerigonza (J) has a correspondent in the Source Form (SF).

It was pointed out above that the most evident change from SF to J is the systematic increase in the number of syllables. J always has twice as many syllables as SF. JER-1, JER-2 and JER-3 are identical in regards to this property.

(28)

SF		*J*	
σ	= 1	σσ	= 2
σσ	= 2	σσσσ	= 4
σσσσ	= 3	σσσσσσσσ	= 8
σσσσσ	= 4	σσσσσσσσσσ	= 10
σσσσσσ	= 5	σσσσσσσσσσσσ	= 12
etc.			

According to this, the constraint MAX(SF-J, σ) is undominated since it is never the case that a syllable in SF is deprived of a correspondent in J. On the other hand, the constraint DEP(SF-J, σ) must be dominated given that J always has a greater number of syllables than the original number present in SF. In order to determine what is causing these violations of the constraint DEP(SF-J, σ), I would like to point out a consistent pattern for every Jerigonza variety. In JER-1, the leftmost segment of every syllable in SF corresponds to the leftmost element of a foot in J.

(29) s ó l es. cúl. tor *Source form*

[(sól.PV)] [(es.PV)(cul.PV)(tór.PV)] *Jerigonza*

'sun' 'sculptor'

In JER-2, the rightmost segment of every syllable in SF corresponds to the rightmost element of a foot in J.

(30) s ó l es. cúl. tor *Source Form*

[(PV.sól)] [(PV.ès) (PV.cùl) (PV.tór)] *Jerigonza*

In JER-3, both the leftmost and the rightmost segments of a syllable in SF correspond to the respective edgemost elements of a foot in J.

(31) s ó l e s. c ú l. t o r *Source Form*

[(só.PVl)] [(ePVs) (cu.PVl) (tó.PVr)] *Jerigonza*

I propose to capture these patterns through the following ANCHORing constraints, which target the peripheries of the prosodic constituents syllable and foot.

(32) ANCHOR(σ)L: *Anchor Syllables Left*

The leftmost element of a syllable in SF corresponds to the leftmost element of a foot in J.

(33) ANCHOR(σ)R: *Anchor Syllables Right*

The rightmost element of a syllable in SF corresponds to the rightmost element of a foot in J.

In order to satisfy either of these ANCHORing constraints, J must provide a foot for the correspondent of every syllable in SF. Nevertheless, J may not project just any type of foot because foot structure is governed by undominated well-formedness constraints such as FOOT-BIN(σσ). The only possible way in which the optimal candidate may satisfy ANCHOR(σ) without violating FOOT-BIN(σσ) is if it adds an epenthetic syllable for every syllable in SF. These remarks lead to conclude that ANCHOR(σ) and FT-BIN(σσ) conspire to force epenthesis in Jerigonza through their domination of the constraint DEP(SF-J, σ). In JER-1, the specific ranking involving these constraints is ANCHOR(σ)L, FT-BIN(σσ) >> DEP(SF-J, σ). This ranking explains why, in Colombian Jerigonza, the epenthetic syllable must follow the correspondent of every syllable in SF. If the epenthetic syllable were to precede, it would preclude satisfaction of ANCHOR(σ)L.

(34) ANCHOR(σ)L, FT-BIN(σσ) >> DEP(SF-J, σ)

SF:	[(sol)]	ANCHOR(σ)L	FT-	DEP(SF-J, σ)
a.	[(sol)]		* !	
b. ☞	[(sol.PV)]			*
c.	[(PV.sol)]	* !		*

Candidate (34a) is ruled by FT-BIN(σσ) because it contains a monosyllabic foot. Candidates (34b) and (34c) both manage to satisfy FT-BIN(σσ) by adding an epenthetic syllable. This is at the affordable cost of violating low-ranking DEP(SF-J, σ). But it is (34b) that is selected as optimal for it not only complies with FT-BIN(σσ) but it also anchors the leftmost segment of the syllable in SF with the left edge of a foot. However, two other candidates need be considered here: [(so.l<u>V</u>)], which parses the coda segment of the SF-syllable as the onset of a J-syllable; and [(so.<u>PV</u>l], which preserves the syllabic role of all SF-segments but sacrifices their contiguity within the syllable. The following constraints participate in the evaluation to rule these candidates out.

(35) ST-ROLE: *Structural Role*

A segment in SF and its correspondent in J must have identical syllabic roles.

(36) O-CONTIG(σ): *Syllabic Output Contiguity*

The segments of a syllable in J standing in correspondence with the segments of a syllable in SF form a contiguous string.

The function of ST-ROLE and O-CONTIG(σ) is to preserve the integrity of the syllable. In JER-1, these constraints are undominated since SF-syllables are never broken up nor do their segments change their syllabic roles. Candidates (37d) and (37e) below are ruled out by O-CONTIG(σ) and ST-ROLE, respectively, for incurring this kind of violations.

(37) ST-ROLE, O-CONTIG(σ), ANCHOR(σ)L, FT-BIN(σσ) >> DEP(SF-J, σ)

SF: [(sol)]	ST-ROLE	O-CONT(σ)	ANCH(σ)L	FT-BIN(σσ)	DEP(SF-J, σ)
a. [(sol)]				* !	
b. ☞ [(sol.<u>PV</u>)]					*
c. [(<u>PV</u>.sol)]			* !		*
d. [(so.<u>PV</u>l)]		* !			*
e. [(so.l<u>V</u>)]	* !				*

Note that when SF has an even number of syllables, epenthesis is still necessary given that anchoring applies to the correspondent of every single syllable in SF and every foot in J must be disyllabic.

(38) ANCHOR(σ)L, FT-BIN(σσ) >> DEP(SF-J, σ)L

SF: [can.(ción)]	ANCHOR(σ)L	FT-BIN(σσ)	DEP(SF-J, σ)L
a. [(can)(cion)]		* ! *	
b. [(can.cion)]	* !		
c. [(<u>PV</u>.can)(<u>PV</u>.cion)]	* ! *		* *
d. ☞ [(can.<u>PV</u>)(cion.<u>PV</u>)]			* *

Candidate (38a) provides a foot for the correspondent of every syllable in SF. This enables it to satisfy ANCHOR(σ)L, but given that these feet are monosyllabic, FT-BIN(σσ) rules it out. Candidate (38b) opts for complying with FT-BIN(σσ) by parsing both syllables into a single foot. The problem is that with a single foot in J, only one of the two syllables in SF may be properly anchored. This results in a violation of ANCHOR(σ)L. Candidates (38c) and (38b) satisfy FT-BIN(σσ) by adding epenthetic syllables, but then again, only when these epenthetic syllables do not take over the left periphery of the foot may ANCHOR(σ)L be satisfied (38d).

In JER-2, the active ANCHORing constraint is ANCHOR(σ)R. Peruvian Jerigonza is just the mirror image of Colombian Jerigonza. In JER-2, epenthetic syllables may not appear at the right periphery of any feet in J because that would preclude right anchoring (39b). This is illustrated in the following tableau.

(39) ST-ROLE, O-CONTIG(σ), ANCHOR(σ)R, FT-BIN(σσ) >> DEP(SF-J, σ)

SF: [(sol)]	ST-ROLE	O-CONT(σ)	ANCH(σ)R	FT-	DEP(SF-J, σ)
a. [(sol)]				* !	
b. [(sol.PV)]			* !		*
c. ☞ [(PV.sol)]					*
d. [(sV.Pol)]		* !			
e. [(so.lV)	* !		*		

In JER-3, both ANCHORing constraints are top-ranking. ANCHOR(σ)L and ANCHOR(σ)R ban all epenthetic material from both edges of the foot. In order to satisfy both types of ANCHORing, epenthetic segments must intrude into the boundaries of the original syllables in SF, which indicates that ANCHOR(σ)L/R dominate O-CONTIG(σ). FT-BIN(σσ) must also outrank O-CONTIG(σ) given that the properly anchored disyllabic foot is created at the cost of splitting the syllable (40d).

(40) ST-ROLE, ANCHOR(σ)L/R >> O-CONTIG(σ), FT-BIN(σσ) >> DEP(SF-J, σ)

SF: [(sol)]	ST-ROL	ANCH(σ)L/R	FT-	O-CONT(σ)	DEP(SF-J, σ)
a. [(sol)]			* !		
b. [(sol.PV)]		* !			*
c. [(PV.sol)]		* !			*
d. ☞ [(so.PVl]				*	*
e. [(so.lV)]	* !				*

This analysis shows that Infixing Ludlings are governed by prosodic constraints. The infix results from a conspiracy between the prosodic constraints ANCHOR(σ) and FT-

BIN(σσ) against the correspondence constraint DEP(SF-J, σ). The ranking ANCHOR(σ), FT-BIN(σσ) >> DEP(SF-J, σ) reflects the fact that achieving uniform disyllabic footing is more important than maintaining strict (SF-J)-Identity. Under this proposal, the differences in the site of epenthesis among JER-1, JER-2 and JER-3 are derived from a single general principle rather than stipulated in three different unrelated rules. ANCHOR(σ) is directly responsible for the locus of epenthesis. In JER-1, top-ranking ANCHOR(σ)L pushes epenthetic material away from the left periphery of the foot. In JER-2, ANCHOR(σ)R causes the same effect on the right periphery of the foot. In JER-3, the two versions of ANCHOR(σ) work together to bar epenthetic material from both foot edges.

The fact that Jerigonza is sensitive to syllable edges may be used to shed light on a non-obvious case of syllabification in Spanish. When /s/ is flanked by consonants (e.g. *perspicaz* 'sly'), there are two ways in which this segment could be parsed: (i) as part of the coda of the preceding syllable (e.g. *pers.pi.caz*) or (ii) as part of the onset of the following syllable (e.g. *per.spi.caz*). Consider the following data.

(41)	*SF*	*J*		
	perspicaz	pers.PV.pi.PV.caz.PV	JER-1	'sly'
		PV.pers.PV.pi.PV.caz	JER-2	
		pe.PVrs.pi.PV.ca.PVz	JER-3	
	transporte	trans.PV.por.PV.te.PV	JER-1	'transportation'
		PV.trans.PV.por.PV.te	JER-2	
		tra.PVns.po.PVr.te.PV	JER-3	

The site of epenthesis in these examples indicates that the actual parsing of inter-consonantal /s/ is under the coda of the preceding syllable. The absence of Jerigonza forms where the epenthetic syllable is placed right before /s/ (e.g. *PV.sC*) is to be expected under the assumption that inter-consonantal /s/ is parsed as the coda of a syllable in SF. Candidates such as JER-1 *per.PV.spi.PV.caz.PV*, JER-2 *PV.per.PV.spi.PV.caz*, and JER-3 *pe.PVr.spi.PV.ca.PVz,* where /s/ is parsed as the onset of the following syllable, are ruled out by ANCHOR(σ) given that such parsing of /s/ prevents that the edgemost segment of one of the syllables of SF from corresponding to the edgemost element of a foot in J (42b).

(42) ANCHOR(σ)L, FT-BIN(σσ) >> DEP(SF-J, σ)L

SF: pers.pi.caz	ANCHOR(σ)L	FT-BIN(σσ)	DEP(SF-J, σ)L
a. ☞ [(pers.PV)(pi.PV)(caz.PV)]			* * *
b. [(per.PV)(spi.PV)(caz.PV)]	* !		* * *

2.4.1 Prosodic dependence on the source form

Regardless the site of epenthesis, epenthetic syllables may not be foot heads. In Jerigonza, that prosodic role is reserved for those syllables that do have correspondents in SF. To account for this, I incorporate a proposal made by Alderete (1995). This author observes that the projection of prosodic heads may be input-dependent. That is, only segments that have a correspondent in the input may be parsed under a prosodic head in the output. HEAD(PCat)DEP is the general form of this constraint defined below.

(43) HEAD(PCat)DEP: *Prosodic Head Dependence*

Every segment contained in prosodic head PCat in S_2 has a correspondent in S_1.

There are different forms of HEAD-DEP depending on what prosodic category is relevant. The data in (44) below show that, in Jerigonza, the foot is the prosodic category whose head is input-dependent. Whether the foot is left or right-headed, the foot head is always a syllable whose segments have correspondents is SF. Foot heads are tonic syllables that receive prominence through stress. Primary stress for the head of the main-stressed foot and secondary stress for the heads of all other feet.

(44)	JER-1	*SF*	*J*	*Gloss*
		pán	[(pán.PV)]	'bread'
		már.mol	[(màr.PV)(mól.PV)]	'marble'
		prés.ta.mos	[(près.PV)(tá.PV)(mós.PV)]	'loans'
	JER-2	pán	[(PV.pán)]	
		már.mol	[(PV.màr)(PV.mól)]	
		prés.ta.mos	[(PV.près)(PV.tà)(PV.mós)]	
	JER-3	pán	[(pá.PVn)]	
		már.mol	[(má.PVr)(mó.PVl)]	
		prés.ta.mos	[(prè.PVs)(tá.PV)(mó.PVs)]	

Based on these patterns, I propose that the version of HEAD-DEP that is active in Jerigonza is HEAD(Ft)DEP, as defined below.

(45) HEAD(Ft)DEP: *Prosodic Head (Foot) Dependence*

Every segment contained in the head of a foot (e.g. a tonic syllable) in S_2 has a correspondent in S_1.

If PCat is a prosodic head in S_2, and PCat contains β, then $\beta \in$ Range ($\Re$).

Although HEAD(Ft)DEP is always satisfied in Jerigonza this is not without conflict. FOOT-FORM is an independent prosodic constraint that determines headness within the foot regardless of the input. There are two versions of this constraint defined as follows.

(46) FT-FORM(Tr): *Trochaic Foot Form*

Align (Ft, L, H(Ft), L)
Align the left edge of a foot with the left edge of its head (e.g. a tonic syllable).

(47) FT-FORM(Iam): *Iambic Foot Form*

Align (Ft, R, H(Ft), R)
Align the right edge of a foot with the right edge of its head (e.g. a tonic syllable).

Except for JER-2, iambic feet do not arise in Spanish.[5] There is almost unanimous consensus that footing in Spanish is trochaic (Harris 1969, 1983, 1989, 1992; Morgan, 1984; Dunlap, 1991; Prieto 1992a,b; Crowhurst, 1992a,b; Rosenthall, 1994; Lipsky, 1996, among others) and this is the type of foot I have consistently found in all of the processes examined here except for the case of JER-2. According to this, the active role of FT-FORM(Tr) in Spanish is unquestionable, whereas the active role of FT-FORM(Iam) is still to be proven. The stand I assume here is that JER-2 does not constitute evidence in support of the claim that FT-FORM(Iam) is an active constraint in Spanish. This is because, as I demonstrate below, the iambic feet of JER-2 can be derived from the interaction of FT-FORM(Tr) with the constraints HEAD(Ft)DEP and ANCHOR(σ)R.

[5] Roca (1990) is the only proposal to analyze Spanish feet as iambic. However, as demonstrated by Harris (1983), Dunlap (1991), Rosenthall (1994) and Lipsky (1996), the patterns of Spanish stress are more satisfactorily accounted for by an analysis that posits trochaic feet.

The effect of FT-FORM(Tr) is that the first syllable within the foot should be the prominent one. Although they are not directly antagonistic, FT-FORM(Tr) is led into conflict with HEAD(Ft)DEP when the dominant anchoring constraint is ANCHOR(σ)R. Such is exactly the case of JER-2 (e.g. *PV.pán* < *pán* 'bread), where ANCHOR(σ)R forces J to have the correspondents of all syllables in SF appear at the right periphery of some foot. With that state of affairs, FT-FORM(Tr) would dictate that the syllable that is at the left periphery of the foot (e.g. the epenthetic PV-syllable) be prominent. This, however, runs afoul of the demands of HEAD(Ft)DEP, which favors the non-epenthetic syllable regardless of its position within the foot. Given that the conflict is resolved in favor of ANCHOR(σ)R and HEAD(Ft)DEP, these constraints must dominate FT-FORM(Tr).

(48) ANCHOR(σ)R, HEAD(Ft)DEP >> FT-FORM(Tr)

SF: pán	ANCHOR(σ)R	HEAD(Ft)DEP	FT-FORM(Tr)
a. [(pán.PV)]	* !		
b. [(pan. PV́)]	* !	*	
c. ☞ [(PV.pán)]			*
d. [(PV́ pan)]		* !	

Candidates (48a) and (48b) are ruled out by ANCHOR(σ)R since they have the epenthetic syllables placed exactly where the correspondents of SF-syllables need appear in order to achieve right anchoring. Candidates (48c) and (48d) are both able to satisfy ANCHOR(σ)R by placing each epenthetic syllable at the left margin of a foot. However, candidate (48c) has the advantage that it is a non-epenthetic syllable that is prominent within each foot in compliance with HEAD(Ft)DEP. According to this, ANCHOR(σ)R and

HEAD(Ft)DEP are directly responsible for the iambic stress pattern of JER-2. Even though candidate (48c) contains a right-headed foot, which is quite bizarre for Spanish, it is selected as optimal because it is the only form that abides by both ANCHOR(σ)R and HEAD(Ft)DEP. My analysis derives the iambic feet of JER-2 from constraint interaction rather than invoking the constraint FT-FORM(Iam). Note that if FT-FORM(Iam) were actually active, we would expect to see its effects surface somewhere else. However, iambic feet only arise when faithfulness to the head of an SF-foot is required.

In JER-1, where ANCHOR(σ)L is top-ranking, FT-FORM(Tr) does not need be violated to satisfy HEAD(Ft)DEP since the correspondents of all syllables in SF must sit at the left periphery of a foot in J, exactly where FT-FORM(Tr) requires the prominent syllable to be (49a). The closest competitor is candidate (49b) but it is discarded by HEAD(Ft)DEP because the segments *PV* that form the tonic syllable do not have correspondents in SF.

(49) ANCHOR(σ)L, HEAD(Ft)DEP >> FT-FORM(Tr)

SF: pán	ANCHOR(σ)L	HEAD(Ft)DEP	FT-FORM(Tr)
a. ☞ [(pán.PV)]			
b. [(pan. PV́)]		* ! *	
c. [(PV.pán)]	* !		*
d. [(PV́pan)]	* !	* *	

The case of JER-3 is basically the same as JER-1, except for the fact that, since both ANCHORing constraints are top-ranking, contiguity within the syllable may not be salvaged. This, however, does not prevent HEAD(Ft)DEP from being strictly obeyed. In tableau (50) below, candidate (50c) is optimal because it is the only one that complies with ANCHORing and HEAD(Ft)DEP. Note that, even though the tonic syllable is not identical to its SF-correspondent, no violation of HEAD(Ft)DEP is incurred because the two segments parsed under it (e.g. /p/, /a/) have correspondents in SF.

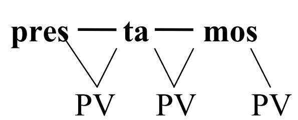
(50) ANCHOR(σ)L, ANCHOR(σ)R, HEAD(Ft)DEP >> FT-FORM(Tr)

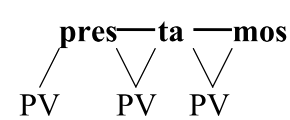
SF: pán	ANCH(σ)L	ANCH(σ)R	HEAD(Ft)DEP	FT-FORM(Tr)
a. [(pán.PV)]		* !		
b. [(PV.pán)]	* !			
c. ☞ [(pá.PVn)]				*
d. [(pa.PV́n)]			* ! *	

It should be stressed that the role played by HEAD(Ft)DEP is essential to ensure that the listener will understand the message. The task of decoding the disguised word is made possible by making prominent only those syllables originally present in SF. The listener is able to reconstruct the original Spanish word by screening out the non-prominent syllables. The original string in SF is restored by putting together all prominent syllables in J, as sketched in (51).

(51) Trochaic footing: Iambic footing:

près.PV.tà.PV.mós.PV PV.près.PV.tà.PV.mós 'loans'





2.4.2 Intrusive elements

Within the frame of this dissertation, one of the most interesting properties of Jerigonza is the fact that some segments that are contiguous in SF may have correspondents that are not contiguous in J. CONTIGUITY is another correspondence constraint that enforces identity between two forms. As all correspondence constraints, CONTIGUITY is bi-directional, which gives rise to two different forms of the constraint.

(52) CONTIGUITY: (McCarthy and Prince, 1995: 371)

I-CONTIG: *Input Contiguity* ("No Skipping")

The portion of S_1 standing in correspondence forms a contiguous string.

Domain (D) is a single contiguous string in S_1.

(53) O-CONTIG: *Output Contiguity* ("No Intrusion")

The portion of S_2 standing in correspondence forms a contiguous string.

Range ($\Re$) is a single string in S_2.

In Jerigonza, S_1 and S_2 correspond to SF and J, respectively. Given that J never skips any elements in SF, I-CONTIG must be top-ranking. But since J usually contains intrusive elements, O-CONTIG must be dominated.

(54) O-CONTIGUITY violations:

σ_1 σ_2 σ_3

c o . m i . d a — *Source form* 'food'

σ_1 $\underline{\sigma_a}$ σ_2 $\underline{\sigma_b}$ σ_3 $\underline{\sigma_c}$

c o . <u>P V</u> . m i . <u>P V</u> . d a . <u>P V</u> — *Jerigonza*

In (54), the correspondents of the syllables σ_1 σ_2 and σ_3 in SF are separated by the epenthetic syllables $\underline{\sigma}_a$ and $\underline{\sigma}_b$ in J. Likewise, on the melodic tier, the segments parsed by these syllables in SF are interrupted by epenthetic $\underline{\text{PV}}$-segments in J. These violations of the constraint O-CONTIGUITY are necessary to comply with ANCHOR(σ) and FT-BIN(σσ). The epenthetic syllables in J may not appear as a string that precedes or follows the correspondents of those syllables present in SF (e.g. *[$\underline{\sigma\sigma\sigma}$ σσσ] or *[σσσ $\underline{\sigma\sigma\sigma}$]) because that would not allow proper anchoring, despite the fact that there is an even number of syllables that permits disyllabic footing. Instead, epenthetic syllables are forced to appear discontinuously because each one of them must pair up with the correspondent of an SF-syllable in order to satisfy both anchoring and foot binarity (e.g. [(σ $\underline{\sigma}$)(σ $\underline{\sigma}$)(σ $\underline{\sigma}$)] or [($\underline{\sigma}$ σ)($\underline{\sigma}$ σ)($\underline{\sigma}$ σ)]). ANCHOR(σ) and FT-BIN(σσ) are then the constraints that dominate O-CONTIGUITY.

(55) FT-BIN(σσ), ANCHOR(σ)L, ANCHOR(σ)R >> O- CONTIG

SF: mes	FT-BIN(σσ)	ANC-(σ)L	ANC-(σ)R	O-CONTIG
[(mes)]	* !			
[($\underline{\text{PV}}$.mes)]		* !		
[(mes.$\underline{\text{PV}}$)]			* !	
☞ [(me.$\underline{\text{PV}}$s))]				PV
SF: ca.mion				
[ca.(mion)]	* !	*	*	
[(ca.mion)]		* !	*	
[($\underline{\text{PV}}$.ca)($\underline{\text{PV}}$.mion)]		* ! *		PV
[(ca.$\underline{\text{PV}}$)(mion.$\underline{\text{PV}}$)]			* ! *	PV
☞ [(ca.PV)(mio.PVn)			*	PV PV

SF: es.cul.tor	FT-BIN(σσ)	ANC-(σ)L	ANC-(σ)R	O-CONTIG
[es.(cul.tor)]		* ! *	* *	
[(es)(cul.tor)]	* !	*	*	
[(<u>PV</u>.es)(<u>PV</u>.cul)(<u>PV</u>.tor)]		* ! * *		PV PV
[(es.<u>PV</u>)(cul.<u>PV</u>)(tor.<u>PV</u>)]			* ! * *	PV PV
☞ [(e.<u>PV</u>s)(cu.<u>PV</u>l)(to.<u>PV</u>r)]				PV PV PV

Tableau (55) illustrates the interaction of these constraints with data from JER-3. The more syllables SF has, the more violations of O-CONTIGUITY need be incurred. These examples show that the optimal output form is never the one that preserves the best CONTIGUITY but always the one that best complies with anchoring and foot binarity. In order to satisfy these dominant principles, some degree of CONTIGUITY must be sacrificed. This is the reason why Infixing Ludlings contain infixing material. A Spanish word, which represents a free morpheme, is changed to meet a particular prosodic form. For this to be possible, the segments that constitute the exponence of that morpheme must have some discontinuous correspondents in the new output form. Jerigonza is an instance of this type of non-concatenative morphology where prosodic constraints are satisfied to the detriment of faithfulness constraints.

2.4.3 The make-up of epenthetic syllables

Not all of the segments that form the epenthetic syllables in SF originate from epenthesis. Whereas in JER-2, both the onset and the nucleus of every epenthetic syllable lack correspondents in SF (e.g. *<u>cha</u>.ès.<u>cha</u>.cul.<u>cha</u>.tór* < *escultor* 'sculptor'), in JER-1 (e.g.

ès.pe.cùl.pu.tór.po < *escultor*) and JER-3 (e.g. *è.pes.cù.pul.tó.por* < *escultor*), only the onset lacks an SF-correspondent because the nucleus is a copy of some vocalic segment present in SF. In order to account for inserted and copied segments, other correspondence constraints are necessary.

(56) MAX(SF-J, seg): *Segmental Maximization of the Source Form*

Every segment in the source form (SF) has a correspondent in Jerigonza (J).

(57) DEP(SF-J, seg): *Segmental Dependence on the Source Form*

Every segment in Jerigonza (J) has a correspondent in the Source Form (SF).

(58) INTEGRITY: (‘No Breaking’)

No element in the Source Form (SF) has multiple correspondents in Jerigonza (J).

Violations of MAX(SF-J, seg) occur whenever a segment in SF lacks a correspondent in J. Conversely, violations of DEP(SF-J, seg) occur whenever a segment in J lacks a correspondent in SF. Since it is always the case that all segments in SF have a correspondent in J (e.g. *mar.PV* < *mar* 'sea'), the constraint MAX(SF-J, seg) must be undominated. However, since every epenthetic syllable in J always contains at least one segment that has no correspondent in SF (e.g. a voiceless stop consonant, /P/), the constraint DEP(SF-J, seg) must be dominated.

As far as INTEGRITY is concerned, every instance of two segments in J that share a single correspondent in SF counts as a violation of this constraint.

(59) $m_1\ a_2\ r_3$ *Source form* 'sea'

$m_1\ a_2\ r_3\ .\ p_4\ a_5$ *Jerigonza*

In (59), SF contains three segments whereas J contains a total of five. This discrepancy in the number of segments would usually be interpreted as two violations of DEP(SF-J, seg). But in actuality, there is only one segment in J that lacks a correspondent in SF (e.g. /p_4/) because the two vocalic segments in J (e.g. /a_2/ and /a_5/) share the same correspondent in SF (e.g. /a_2/). According to this, in the varieties that exhibit vowel-copying (e.g. JER-1 and JER-3), the nucleus of every epenthetic syllable should be computed as an INTEGRITY violation. The question is: what is causing these violations of the constraints INTEGRITY and DEP(SF-J, seg)?

It was established above that the partial ranking ANCHOR(σ), FT-BIN(σσ) >> DEP(SF-J, σ) causes J to add an epenthetic syllable for every SF-syllable correspondent. These new syllable nodes are subject to several well-formedness constraints that regulate syllabic form. Two of these constraints are defined below.

(60) NUCLEUS: A syllable must have a nucleus.

(61) ONSET: A syllable must have an onset.

In order to meet these conditions, every new syllable node in J must dominate at least two segments: a consonant that acts as onset and a vowel that serves as nucleus. Let us focus on the syllable onset first.

The fact that for every epenthetic syllable in J, an epenthetic onset segment is inserted indicates that ONSET dominates DEP(SF-J, seg). That is to say that compliance with syllabic well-formedness is more important than (SF-J)-Identity. Tableau (57) below illustrates the interaction of these constraints with the example *casa* 'house'.

(62) ONSET >> DEP(SF-J, seg)

SF: σ σ / c á s a	ONSET	DEP(SF-J, seg)
a. σ σ σ σ / c à a s á a	* ! *	
b. ☞ σ σ σ σ / c à P a s á P a		P P

The optimal form, (62b), violates the constraint DEP(SF-J, seg) twice because it contains two segments that do not have correspondents in SF. These violations, however, are tolerated in the optimal candidate because they are necessary to comply with higher-ranking ONSET. In regards to the selection of the onset segment, the fact that the only consonants that may appear as the onset of the epenthetic syllable are /p, t, k, ≠/ suggests that voiceless stops are more suitable onsets than other segments. In order to account for this, I follow Colina (1995) in her proposal of a syllable-margin hierarchy for Spanish, which she bases on the original proposal by Prince and Smolensky (1993).

(63) Spanish Syllable-Margin Hierarchy:

*M/a,e,o,i,u >> *M/r,l >> *M/m,n,ñ >> *M/f,s,θ, ǰ,x >> *M/b,d,g >> M/p,t,k,≠

This hierarchy states that vowels, the most sonorous segments, make the worst syllable margins, whereas obstruents, which are the least sonorous segments, make optimal syllable margins.[6] Colina also proposes that, for Spanish, the affinity cut is between /l/ and /i/, which means that any segment that has the sonority of /l/ or lower is margin-preferring and any segment that has the sonority of /i/ or higher is peak-preferring. I claim that, in Jerigonza, the segments /p, t, k, ≠/ may be the onset of epenthetic syllables because ONSET dominates *M/p, *M/t, *M/k and *M/≠ whereas the rest of margin constraints outrank ONSET. This means that it is better to provide syllables with onsets even if doing so requires violating the anti-associational constraints that prohibit /p/, /t/, /k/ and /≠/ to be syllable margins. ONSET, however, is outranked by the rest of anti-associational constraints that prohibit other Spanish segments to be syllable margins (e.g. *M/r,l, *M/m,n,ñ, *M/f,s,θ, ǰ,x, *M/b,d,g, etc.). It is important to point out that the ranking *M/r,l >> *M/m,n,ñ >> *M/f,s,θ, ǰ, x, >> *M/b,d,g >> ONSET >> *M/p,t,k,≠ is consistent with universal sonority principles as they interact with syllable structure. That is, the least sonorous consonants make the best syllable margins. According to this, the tendency observed in Jerigonza is to favor lower-sonority segments so that the epenthetic syllables have optimal onsets. Tableau (64) below illustrates how this ranking accounts for the limited set of segments that are tolerated as the onset of epenthetic syllables. The decision of exactly what segment of the set /p, t, k, ≠/ is to be

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6 Based on their sonority, the hierarchy in (63) captures the 'willingness' of Spanish segments to be parsed as syllable margins. Whether a segment is parsed as the left or right margin of the syllable, does not depend solely on this hierarchy but on its interaction with syllabic well-formedness constraints such as *COMPLEX-ONSET, ONSET, *COMPLEX-CODA, NO-CODA, CODA-CONDITION.

used is however, totally unpredictable. It depends entirely on an agreement Jerigonza speakers make before starting the game, and once the game has started and a segment has been chosen, they may stop the game at any time to switch to another segment from the set /p, t, k, ≠/.

(64) *M/r,l >> *M/m,n,ñ >> *M/f,s,θ, ǰ,x >> *M/b,d,g >> ONSET >> *M/p,t,k,≠

SF: [(cá.sa)]	*M/l,r	*M/m,n,ñ	*M/ f,s,θ, ǰ,x b,d,g	ONSET	*M/p,t,k,≠
a. [(cà.<u>rV</u>)(sá.<u>rV</u>)]	* ! *				
b. [(cà.<u>mV</u>)(sá.<u>mV</u>)]		* ! *			
c. [(cà.<u>fV</u>)(sá.<u>fV</u>)]			* ! *		
d. [(cà.<u>V</u>)(sá.<u>V</u>)]				* ! *	
e. ☞ [(cà.<u>tV</u>)(sá.<u>tV</u>)]					* *

Candidate (64d) is ruled out because it contains two onsetless syllables that run afoul of ONSET. Even though syllables must have onsets, not any segment is allowed to be parsed in that position. Parsing a voiced stop, fricative, nasal or liquid as onset contravenes the dominant anti-associational constraints *M/f, s, θ, ǰ,x/ and *M/b,d,g/ (64c), *M/m,n,ñ/ (64b) and *M/r,l/ (64a). But given that *M/p,t,k,≠ is outranked by ONSET, any segment of this set may be parsed as a syllable margin (64e). In sum, the partial ranking ONSET >> DEP(SF-J, seg) accounts for the fact that the onset of epenthetic syllables is an epenthetic segment. The ranking *M/r,l >> *M/m,n,ñ >> *M/f,s,θ, ǰ,x >> *M/b,d,g >> ONSET >> *M/p,t,k,≠ relies on universal sonority considerations to account for the tendency to prefer voiceless stops as the epenthetic segment that fills that position.

David Odden pointed out to me that OCP violations might have an effect on the selection of the onset segment in cases where the epenthetic consonant ends up being adjacent to a segment of similar make-up. For instance, in JER-1, if speakers choose to use /t/ as the epenthetic consonant, the source form [so.sje.dád] 'society' may be expected to give rise to [sò.to.sjè.te.dád.pa] rather than [sò.to.sjè.te.dád.ta] in order to avoid the homorganic sequence [dt]. As a result, the fixed consonant would become 'unfixed' in order to satisfy a constraint such as the OCP. Nevertheless, the data I have collected from the three Jerigonza varieties show that OCP violations do not force to change the selected consonant. The fact that [so.sje.dád] generates [sò.to.sjè.te.dád.ta], despite the OCP violation, suggests that the OCP is not active here.

Concerning the nucleus, the selection of the optimal nuclear segment is also based on sonority considerations. Here again, I follow Colina (1995) in her proposal of a syllable-peak hierarchy for Spanish, based again on the one proposed by Prince and Smolensky (1993).

(65) Spanish Syllable-Peak Hierarchy:

*P/≠,p,t,k >> *P/b,d,g >> *P/f,s,θ, ǰ,x >> *P/m,n,ñ >> *P/l,r >> *P/i,u,e,o,a

This hierarchy states that parsing a consonantal segment as a syllable peak is more costly than parsing any vocalic segment in that position. Vowels make better syllable peaks than consonants because of their higher sonority. In Jerigonza, any of the Spanish vowels, /a, e, i, o, u/, may fill the nucleus of the epenthetic syllable because the well-formedness constraint NUCLEUS dominates the syllable-peak associational constraints *P/a, *P/e,o and *P/i,u. On the other hand, all consonantal segments are barred from nuclear position because the associational constraints *P/≠,p,t,k,b,d,g,f,s,θ,ǰ,x; *P/m,n,ñ and *P/l,r outrank NUCLEUS. Using the example *arbol* 'tree' in JER-2, tableau (66) shows that although epenthetic syllables must have a nucleus (66c), not any segment may be parsed in that position (66a-b). Only vowels, the most sonorous segments of the language, may be syllable nuclei (66d).

(66) *P/≠,p,t,k,b,d,g,f,s,θ, ǰ,x >> *P/m,n,ñ,l,r >> NUCLEUS >> *P/ i,u,e,o,a

SF: σ σ a r bol	*P/≠,p,t,k,b,d, g, f,s,θ, ǰ,x	*P/m,n,ñ,l,r	NUCLEUS	*P/i,u,e,o,a
a. σ σ σ σ t s a r t s bol	* ! *			
b. σ σ σ σ t n a r t n bol		* ! *		
c. σ σ σ σ t a r t bol			* ! *	
d. ☞ σ σ σ σ t i a r t i bol				* *

JER-2, differs from JER-1 and JER-3 in the fact that the segment that fills the nucleus of the epenthetic syllable is not copied but inserted. This means that, in JER-2, NUCLEUS dominates DEP(SF-J, seg). As a consequence of this, DEP(SF-J, seg) undergoes greater damage in Jer-2 than in the other varieties of Jerigonza since this constraint is violated to fill both the onset and the nucleus positions. In order to satisfy Onset and Nucleus, the optimal Jer-2 form needs incur two violations of Dep(sf-j, seg) for every epenthetic syllable node it contains (67b).

(67) Onset, Nucleus >> Dep(sf-j, seg)

sf: σ σ a r b o l	Onset	Nucleus	Dep(sf-j, seg)
a. σ σ σ σ i a r i b o l	* ! *		i i
b. ☞ σ σ σ σ t i a r t i b o l			t i t i
c. σ σ σ σ t a r t b o l		* ! *	t t

By contrast, in Jer-1 and Jer-3, the nucleus is filled with a copy of a segment in sf. This indicates that, in these two Jerigonza varieties, the constraint Nucleus is satisfied to the detriment of the correspondence constraint Integrity. This strategy allows j to spare a violation of Dep(sf-j, seg) for every epenthetic syllable node it contains. The partial ranking Dep(sf-j, seg) >> Nucleus >> Integrity serves to rescue (sf-j)-Identity in Jer-1 and Jer-3. j is more similar to sf when it includes a copy of an sf-segment than when it adds a new segment. Tableau (68) below illustrates these remarks with the example *piso* 'floor'. The reader is reminded that only candidates that satisfy top-ranking Anchor(σ) and Ft-Bin(σσ) remain in competition at this point.

Candidate (68a) violates low-ranking INTEGRITY in order to provide segments that fill the nuclei of the epenthetic syllable nodes. This, however, is not enough to comply with syllabic well-formedness. The constraint ONSET discards this candidate because two of the four syllables it contains are deprived of onsets. Both (68b) and (68c) satisfy ONSET by inserting a consonant for every epenthetic syllable node. Of these two competitors, (68b) is preferred because it avoids incurring too many violations of DEP(SF-J, seg) at the expense of violating lower-ranking INTEGRITY. This move allows candidate (68b) to spare two violations of DEP(SF-J, seg) and maintain a better (SF-J)-Identity.

(68) ONSET >> DEP(SF-J, seg) >> NUCLEUS >> INTEGRITY

SF: σ σ pí so	ONSET	DEP(SF-J, seg)	NUCLEUS	INTEGRITY
a. σ σ σ σ pì i só o	* ! *			i o
b. σ σ σ σ ☞ pì ki só ko		k k		i o
c. σ σ σ σ pì ke só ke		k k e ! e		

But if copying SF-segments helps preserve (SF-J)-Identity, why is it that the onset of epenthetic syllables is not copied as well? In other words, if vowel copying helps rescue (SF-J)-Identity, consonant copying would contribute to maximize that identity. A candidate that contains epenthetic syllables filled with copies of SF-segments (e.g.

[(pì.pi)(sí.si)] would comply with top-ranking ANCHOR(σ) and FT-BIN(σσ), plus it would manage to avoid all DEP(SF-J, seg) violations while still respecting NUCLEUS and ONSET. Notwithstanding, consonant copying is not possible in any variety of Jerigonza.

The solution I propose is to split INTEGRITY into two constraints: V-INTEGRITY and C-INTEGRITY. This approach has the advantage of allowing independent evaluations of vocalic and consonantal integrity and it is supported by the fact that processes that cause a vocoid in the input to have multiple correspondents in the output (e.g. diphthongization, vowel-copying) are far more common than processes that cause the same effect in consonants. In JER-1 and JER-3, the well-formedness constraint NUCLEUS dominates V-INTEGRITY. But C-INTEGRITY outranks the well-formedness constraint ONSET. This order of priorities tolerates that a vocalic segment in SF has double correspondents in J, but it does not allow two consonantal segments in J to share a single correspondent in SF.

(69) C-INTEGRITY >> ONSET >> DEP(SF-J, seg) >> NUCLEUS >> V-INTEGRITY

SF: σ σ k á s a	C-INTEG	ONSET	DEP(SF-J, seg)	NUCLEUS	V-INTEG
a. σ σ σ σ pì pi só so	p ! s				i o
b. σ σ σ σ pì i só o		* ! *			i o
c. ☞ σ σ σ σ pì ki só ko			k k		i o

In tableau (69), the optimal output form manages to avoid two violations of C-INTEGRITY by epenthesizing, rather than copying, the two consonants that ONSET requires under the epenthetic syllable nodes. The optimal form in JER-1 and JER-3 is one that satisfies ONSET by violating DEP(SF-J, seg) and complies with NUCLEUS by compromising V-INTEGRITY (69c). It should be pointed out that, despite their low rank, DEP(SF-J, seg) and INTEGRITY play a very important role in determining the form of epenthetic syllables. The data show that a maximum of two segments may be added for every epenthetic syllable node. This means that marked structure like complex onsets, diphthongs and codas may not be created in J. There are syllable well-formedness constraints that militate against such configurations.

(70) *COMPLEX-O: *No Complex Onsets*

Syllable onsets do not branch.

(71) *COMPLEX-N: *No Complex Nuclei*

Syllable nuclei do not branch.

(72) *CODA: *No Codas*

Syllables do not have codas.

If epenthetic syllables contained onset clusters, diphthongs or coda consonants, J would certainly get additional marks from these constraints. However, *COMPLEX-O, *COMPLEX-N and *CODA are not directly responsible for the fact that epenthetic syllables are unmarked. These well-formedness constraints are actually dominated by the correspondence constraint MAX(SF-J, seg) since J may contain marked syllable structure, as long as this is structure that is present in SF (73a).

(73) MAX(SF-J, seg) >> *COMPLEX-O, *COMPLEX-N, *CODA

SF: trejn.ta	MAX(SF-J, seg)	*COMPL-O	*COMPL-N	*CODA
a. ☞ trejn.PV.ta.PV		*	*	*
b. tejn.PV.ta.PV	r !		*	*
c. ten.PV.ta.PV	r ! j			*
d. te.PV.ta.PV	r ! jn			

The question is why it is specifically epenthetic syllables that may not contain marked syllable structure. I claim that DEP(SF-J, seg) and INTEGRITY are responsible for this. The addition of two segments for every epenthetic syllable node is justified by the need to satisfy ONSET and NUCLEUS. Beyond that point there are no well-formedness constraints requiring the presence of any more segments. On the contrary, there are well-formedness constraints prohibiting them. Crucially, if more than two segments were added for every epenthetic syllable node, then unnecessary violations of either DEP(SF-J, seg) or INTEGRITY would be incurred. In the evaluation, a candidate that violates the constraints minimally (74a) is favored over candidates that incur unnecessary violations (74b-d), even when the violated constraints are low-ranking.

(74) ONSET >> DEP(SF-J, seg) >> NUCLEUS >> V-INTEGRITY

SF: trejn.ta	ONSET	DEP(SF-J, seg)	NUCLEUS	V-INTEGRITY
a. ☞ trejn.Pe.ta.Pa		P P		e a
b. trejn.Pre.ta.Pa		Pr ! P		e a
c. trejn.Prej.ta.Pa		Pr ! P		ej a
d. trejn.Prejn.ta.Pa		Pr ! n P		ej a

It should be kept in mind that the epenthetic syllable in Jerigonza is not a reduplicant. Therefore, it is not required to be identical to a base. Recall that epenthetic syllables are needed to meet a prosodic configuration enforced by ANCHOR(σ) and FOOT-BIN(σσ) . The reason why these new syllables appear in J is because they are necessary to complete a disyllabic foot that hosts the correspondent of every syllable in SF. These new syllables must be well-formed by having a nucleus and an onset but they do not need be identical to any syllable in SF.

Concerning diphthongs, it is important to point out that it is the most sonorous vocoid that is copied by the epenthetic syllable (e.g. **trejn.Pi.ta.Pa ~ trejn.Pe.ta.Pa* < *trejnta* 'thirty'). In other words, the peak of the epenthetic syllable is a copy of a segment that is the peak of an SF-syllable. This observation suggests that multiple correspondents of a single segment in SF must preserve the syllabic role of the SF-segment. The constraint ST(ructural)-ROLE, which requires that correspondent elements play the same syllabic role, may only be satisfied if the two correspondents of a segment parsed as a syllable peak in SF are both parsed as syllable peaks in J. According to this, ST-ROLE must dominate V-INTEGRITY to prevent that the less sonorous vocoid of a diphthong be copied by the epenthetic syllable (75b).

(75) ST-ROLE >> V-INTEGRITY

SF: trejn.ta	ST-ROLE	V-INTEGRITY
a. ☞ trejn.Pe.ta.Pa		e
b. trejn.Pi.ta.Pa	{j/i} !	i

2.4.4 Featural unfaithfulness

Although there is a correspondence relationship binding J to be faithful to SF, these two forms may not be identical because the constraints DEP(SF-J), O-CONTIGUITY and V-INTEGRITY are dominated. This explains why (i) J has more syllables and segments than SF, (ii) J contains intrusive elements, and (iii) J may include vocalic segments with multiple correspondents in SF. Another fissure in (SF-J)-Identity has to do with featural unfaithfulness. A segment *x* in J may stand in correspondence with a segment *y* in SF without being featurally-identical. This is because the addition of new syllables in J may create the context for a process that applies to *y*. The data in (76) below illustrate the processes of nasal assimilation and spiranthization. Nasals assimilate in place to a following consonant (76a) and voiced stops spirantize when preceded by a segment that bears the feature [continuant] (76b).

(76)		*SF*	*J*	*Gloss*
	a.	leŋ.gwa	lem.pe.ɣwa.pa	'tongue'
		tjem.po	tjen.te.po.to	'time'
		kan.sjon	kaŋ.ka.sjoŋ.ko	'song'
		len.to	le·.≠e.to.≠o	'slow'
	b.	kam.bjo	cam.pa.βjo.po	'change'
		sel.da	sel.te.ða.ta	'cell'
		maŋ.go	man.ta.ɣo.to	'mango'

In (76a), the nasal re-assimilates to the place of articulation of the new consonant following it, either /p/, /t/, /k/ or /≠/. In (76b), the voiced stop becomes a fricative since it is now preceded by the vowel of the epenthetic syllable. These changes may arise only in JER-1and JER-2, given that in JER-3 the epenthetic syllable does not alter the context where the segments in question appear (e.g. *a.p̱a[m].[b]o.p̱os* < *a[m].[b]os* 'both'). Clearly, both processes arise as spreading of a phonological feature: [place], in nasal assimilation and [continuant], in spirantization. I follow Padgett (1995) in the use of SPREAD as the constraint that forces assimilation. The two relevant version of SPREAD are defined in (77) and (78) below.

(77) SPREAD(pl): *Spread [place]*

The place feature of a consonant spreads to a preceding nasal.

(78) SPREAD(cont): *Spread [continuant]*

The feature continuant spreads to a following voiced stop.

As pointed out by Padgett (1995), it may be that SPREAD must ultimately be reduced to more fundamental constraints invoking plausible phonetic bases for assimilation such as the fact that it enhances the perceptibility of the affected feature by extending it, it eliminates contrasts in non-prominent locations and it leads to fewer overall articulations/specifications. For the current purposes, however, SPREAD suffices to embody the spreading imperative necessary to account for assimilation.

There is also a constraint family that regulates featural correspondence between SF and J. This is IDENT(F), originally proposed by McCarthy and Prince (1995), which is defined as follows.

(79) IDENT(F): *Feature Identity*

Let α be a segment in S_1 and β be any correspondent of α in S_2.
If α [γF], then β is [γF]

The specific instantiations of IDENT(F) acting on the data in (76) are IDENT(SF-J, pl) and IDENT(SF-J, cont). In Jerigonza, IDENT(SF-J, pl) and IDENT(SF-J, cont) are outranked by SPREAD(pl) and SPREAD(cont). In tableau (80) below, the optimal candidate (80a), undergoes the spreading processes at the expense of violating IDENT(SF-J).

(80) SPREAD(pl), SPREAD(cont) >> IDENT(SF-J, pl), IDENT(SF-J, cont)

SF: a[m].[b]os	SPR(pl)	SPR(cont)	ID(SF-J, pl)	ID(SF-J, cont)
a. ☞ a[ŋ].<u>k</u>a.[β]os.<u>k</u>o			*	*
b. a[ŋ].<u>k</u>a.[b]os.<u>k</u>o		* !	*	
c. a[m].<u>k</u>a.[b]os.<u>k</u>o	* !	*		

2.5 Summary

Jerigonza is a ludling in Spanish. Ludlings are alternate linguistic systems that are parasitic on a natural language. They manipulate the morpho-phonological structure of their host language. Jerigonza alters Spanish word-structure in order to achieve a prosodic configuration where every syllable is parsed under a disyllabic foot. This is an effect triggered by undominated prosodic constraints such as PARSE-SYLL and FOOT-BIN(σσ). Additionally, the constraint ANCHOR(σ) forces the edgemost elements of a syllable in the source form to correspond to the edgemost elements of a foot in Jerigonza. The only way to satisfy these conditions is if Jerigonza adds an epenthetic syllable for every syllable in the source form, so that the correspondent of every syllable in the source form pairs up with an epenthetic syllable to complete a disyllabic foot that makes anchoring possible. There are three different varieties of Jerigonza according to ANCHOR(σ). In JER-1, ANCHOR(σ)L prevents epenthetic syllables from appearing at the left periphery of the foot. In JER-2, ANCHOR(σ)R causes the same effect for the right periphery of the foot, and in JER-3, ANCHOR(σ)L and ANCHOR(σ)R bar epenthetic syllables from both foot edges. Epenthetic syllables in Jerigonza may not bear stress because the projection of foot heads is input-dependent. The constraint HEAD(Ft)DEP demands that every segment parsed under a tonic syllable in Jerigonza have a correspondent in the source form.

Epenthetic syllables must comply with principles of syllabic well-formedness embodied by constraints such as NUCLEUS and ONSET. ONSET is always satisfied by adding an epenthetic consonant, which is a voiceless stop because it is less costly to parse a low-sonority segment as a syllable margin. NUCLEUS, on the other hand, may be satisfied through vowel-copying, when it dominates V-INTEGRITY, or through vowel epenthesis, when it outranks DEP(SF-J, seg). Even though DEP(SF-J) and INTEGRITY are dominated, they are violated only minimally. Adding more than two segments for every epenthetic syllable node would give rise to unjustified violations of DEP(SF-J, σ) or INTEGRITY that would damage (SF-J)-Identity unnecessarily. Vowel-copying is precisely a strategy to reduce the dissimilarity between SF and J that the dominant prosodic constraints are causing. One of the most striking differences between Jerigonza and its source form is the disruption in the contiguity of elements in the source form. Domination of the prosodic constraints ANCHOR(σ) and FOOT-BIN(σσ) over the correspondence constraints DEP(SF-J) and O-CONTIGUITY is what causes Jerigonza to have a greater number of syllables than the source form and that the sequential order of elements in the source form be partially broken in Jerigonza. The following constraint hierarchy accounts for all the properties of this language game.

(81) Constraint hierarchy responsible for Jerigonza: