

Ioanna Kappa
 University of Crete
 kappa@phl.uoc.gr
 kappa@otenet.gr

AN OPTIMALITY THEORETIC ACCOUNT OF THE (WEST) CRETAN DIALECT

Abstract

The paper offers an analysis of the onset obstruent clusters of the dialect spoken in the west part of Crete (WC-dialect). These onset obstruent clusters surface as violators of Sonority Sequencing Principle and differ from the corresponding clusters of the standard Modern Greek (MG) in the following way: the members of such a cluster in MG conforms to the constraint of different manner of articulation, whereas the members of such a cluster in WC-dialect violate this constraint. FS clusters (unmarked) and FF clusters (marked) are allowed to surface in the WC-dialect. The shape of the clusters are regulated by a set of markedness constraints stated over the feature [continuant] which interact with Faithfulness (in this case with the IDENT (F manner) constraint) and the data provide also crucial evidence for the activity of the constraint *SO. The problematic cases which deviate from the proposed constraint ranking can be treated, if we consider a reranking of the constraints.

1. Introduction

The languages of the world differ in the structure of their onsets. There are languages that allow only simple onsets, whereas other languages allow consonantal clusters in onset-position with different degree of complexity. The languages with complex onsets obey the Sonority Sequencing Principle (SSP) (see Steriade 1982, Selkirk 1984 among others) and allow core clusters. Other languages allow clusters that do not conform to the SSP generalisations and these clusters are considered as violators of SSP (e.g. 's+Stop' clusters). In the present paper I will describe and analyse the onset obstruent clusters of a Greek dialect, that of Western Crete (WC). These onset obstruent clusters surface as violators of SSP and differ from the corresponding clusters of the standard Modern Greek (MG) in the following way: the members of such a cluster in MG conforms to the constraint of different manner of articulation, whereas the members of such a cluster in WC dialect violate this constraint, e.g. two fricative segments occur on the surface as members of an onset-cluster ([fç], [θç], [xs]) or the members of an obstruent cluster in WC dialect share the same feature for [voicing]. For the purposes of the paper I will provide a constraint-based analysis within the framework of Optimality Theory (Prince & Smolenski, 1993; McCarthy & Prince, 1995), which give us the tools for a principled and formal account of the markedness relations observed in the data. I propose that the shape of the clusters in WC-dialect are regulated by a set of structural constraints stated over the feature [continuant] which interact with Faithfulness, and I provide the constraint ranking that will define the individual grammar of the WC-dialect.

2. Surface Onsets and Codas

This paper is part of a study on the phonological structure of the dialect of West Crete. I will present briefly the syllabic structure of the WC dialect, i.e. the possible onset types and the coda condition, and then I will focus my attention on the description of the 2-member obstruent clusters.

2.1. Onset types

Single Onsets:

Any consonant may occur syllable-initially as a single onset.

2-member Onsets:

Onsets consisting of [Obstruent + Nasal] or [Obstruent + Liquid] may be realised in the dialect in syllable-initial position. The homorganic sequences do not surface in the dialect, i.e. *[pm], *[tl], *[tn], *[sl], *[sr] etc. (OCP_{PLACE}.)

Clusters consisting of [Obstruent + Obstruent] also surface:

- Fricative + Stop [ft, xt, fk, st, sk, sf]
- Fricative + Fricative [θç, fç, xs]
- Stop + Fricative [pç], but *[tç, kç]

3-member Onsets:

Clusters consisting of [Fricative + Stop + Nasal] or [Fricative + Stop + Liquid] surface in onset position. The clusters [xtr, xpl, ftr, stm, skn, skr] occur word- medial, and the clusters [skn, skr] word-initial.

Clusters of [Fricative + Fricative + Fricative] occur also:

[fθç],	[sθç]:
afθça (ears),	anosθça (tastlessness)

Clusters of [Stop + Fricative + Fricative] occur also

[psç]:	[ksç]:
anipsça (nephews)	ksça su (do as you please !)

4-member Onsets:

The dialect does not allow onsets consisting of 4 members:

[-fstr] → [-Østr], [-fsp] → [-Øspl]

MG.	WC Dialect	Gloss
[afstria]	[astria]	(Austria)
[efsplaxnia]	[esplaxnia]	(compassion)

The first member [f] of the cluster is deleted, due to the fact that it is not possible for it to be syllabified either in onset or in coda-position, thus the words [afstria] and [esplaxnia] are realised as [astria] and [esplaxnia].¹

2.2. Codas

The WC dialect shows preference for open syllables. Nasals are not permitted in Coda position, either syllable-final or word-final. Syllable-final are deleted, word-final are either deleted or occurs epenthesis of [e].

The lateral [l] is often replaced by [r] in coda position. [s] occurs word-final as morphological marker (but sometimes is [s] deleted, exhibiting the tendency of the dialect for open syllables)

*C]_σ
Nasal
Lateral

Deletion of [n], or CV syllable (via epenthesis)

	MG.	WC Dialect	Gloss
• word final:	καθίkon	[kaθíko]	(duty),
	tón	[tóne]	(Art. Gen.PL)
• syllable final:	án. θos	[á. θos]	(flower)
[r] occurs syllable-final:	el. píða	[er. píða]	(hope)

[s]: word-final as part of the morphological marker ([s] is sometimes deleted).

Supporting evidence for the Coda Condition of the dialect offers us the Turkish loan words, which are incorporated in the lexicon of the dialect. The following examples show that Nasals and Stops are not allowed in Coda position, and the dialect repairs it via epenthesis, creating an open syllable.²

*Loan words (from Turkish)*³

Turkish:	WC Dialect	Gloss
kam . cí	ka . mu . cí	horsewhip
sam . dán	sa . mu . dá . ni	candlestick
ka . pat . má	ka . pa . tu . má	force sb. into marriage

¹ An analysis of the syllable-structure, syllabification etc. of the WC Dialect is beyond the scope of this paper and it is an issue of a further study.

² These few examples show also that the dialect seems to preserve the Turkish Vowel Harmony of backness/frontness, but this issue is beyond the scope of this paper.

³ Data from informants.

3. On the Typology of Obstruent Clusters

Morelli (1998, 1999) proposed a universal typology of onset obstruent clusters, based on a cross-linguistic study of 25 languages belonging to different language families. She points out that there are four possible ways in which stops (S) and fricatives (F) can be combined and form a cluster in the languages of the world.

FS	(e.g. Greek, English /st/, Havasupai /θp/, German /ft/)
SF	(e.g. Greek, Wichita /ks/, Paipai /px/)
FF	(e.g. Greek, Italian /sf/)
SS	(e.g. Greek, Khasi /pt/, Georgian /t'p ^h /)

With respect to *Sonority Sequencing Principle* (Selkirk, 1984; Steriade, 1982 i.a) SF clusters are wellformed and FF/ SS /FS clusters are ill-formed.

(1) *Sonority Sequencing Principle* (SSP)

STOPS < FRICATIVES < NASALS < LIQUIDS < VOWELS
(< : less sonorous than)

Morelli (1998) argues that SSP is not relevant to the construction of obstruent clusters because it fails to account for the markedness relations and the implicational universals observed in the typology of onset obstruent clusters.⁴ She points out that the FS cluster is the only cluster that can occur in isolation, it is always present and the presence of other types of combinations always implies its presence. The presence of a sequence of 2 fricatives always implies the presence of FS clusters, but it seems to be independent of the other two types of clusters, i.e. SF and SS. Morelli establishes the markedness relations among the clusters comparing the relative harmony of the forms with respect to some constraint (2a).

(2a) Harmonic orderings (Morelli, 1998, 1999)

- i) FS > FF,
- ii) FS > SF > SS (> : more harmonic than)

The presence of a FF cluster in a language always implies the presence of a FS cluster. Morelli proposes the following structural constraints (2b) for the establishment of the harmonic orderings.

(2b)

OCP[-cont], OCP[+cont]: adjacent segments with the same value for continuancy are disallowed

*SO: a tautosyllabic sequence of a stop and any obstruent is disallowed.

⁴ Morelli (1998) points out that it has been recognized in the literature that an analysis of such clusters must be found outside sonority.

The interaction of the 3 structural constraints above Faithfulness will account for the relative well/ill-formedness of each cluster within a language (Tableau in 2c).

(2c)

	OCP[+cont]	*SO	OCP[-cont]
a. FS	√	√	√
b. FF	*	√	√
c. SF	√	*	√
d. SS	√	*	*

By interleaving the markedness constraints (OCP[-cont], OCP[+cont], *SO) with Faithfulness for [continuancy], a full typology of onset clusters is obtained, as well as its implicational universals (cf. Morelli, 1999). 6 different grammars or language types result from the rerankings of the constraints (2d).

(2d)

Language Types	Constraint Rankings
Type 1: FS	OCP[+cont], OCP[-cont], *SO >> Faith
Type 2: FS, FF	----- OCP[-cont], *SO >> Faith >> OCP[+cont]
Type 3: FS, SF	OCP[+cont], OCP[-cont] ----- >> Faith >> *SO
Type 4: FS, SF, FF	----- OCP[-cont] ----- >> Faith >> OCP[+cont], *SO
Type 5: FS, SF, SS	OCP[+cont] ----- ----- >> Faith >> OCP[-cont], *SO
Type 6: FS, SF, FF, SS	Faith >> OCP[+cont], OCP[-cont], *SO

The ranking for the language type 1, allows only FS clusters to surface. FS is the unmarked cluster with respect to all markedness constraints, therefore whatever ranking is established, it will always surface. It is only necessary that the markedness (structural) constraints dominate Faithfulness. Modern Greek (*dimotiki*, the common spoken language) belongs to Type 1 (cf. Morelli, 1999:80ff).

4. Data

The source of these dialect data is the material collected by Kondosopoulos (1959, 1969), Ksanthinakis (1996) and Pagalos (1955), as well as data from informants. In the WC dialect consonantal clusters surface as well consisting of [fricatives+stops], [fricatives+fricatives], and [stops+fricatives]. These surface representations do not conform to the corresponding representations in MG. We observe that the WC dialect favours obstruent clusters beginning with a fricative, achieving this via assimilation as in (3c), as well as clusters beginning with a fricative, but with different manner of articulation among the members of the clusters, as in (3a, 3b through dissimilation of the second member of the clusters). The members of the clusters must also share the same value for the feature [voice], as in (3a-d).

4.1. Surface representations in WC dialect:

	WC	MG ⁵	Gloss
3a. <i>Fricative + Stop</i> (FS)			
	[prosefk'i]	[prosefçi / prosefk'i]	pray
	[eftis]	[efθis / eftis]	straight / at once
	[extimo]	[ektimo / extimo]	appreciate, 1. SG.
	[extropi]	[ektropi / extropi]	diversion
	[expliksi]	[ekpliksi]	surprise
	[çilofita]	[çilopita]	(a kind of noodles)
	[katoftro]	[katoptro / katoftro]	mirror
	[expliksi]	[ekpliksi]	surprise
3b. <i>[s] + Stop</i>			
	[skoli]	[sxoli / skoli]	school
	[skeðio]	[sxeðio / skeðio]	plan
	[eskros]	[esxros]	disgraceful
	[isknos]	[isxnos / isknos]	skinny
	[mistos]	[misθos / mistos]	salary
	[astma]	[asθma / astma]	asthma
3c. <i>Fricative + Fricative</i> (FF)			
	[teθça]	[tetja]	such, Adj. 1. Pl.
	[xarθça]	[xartja]	papers
	[θça]	[θja / θça]	aunt
	[yleðja]	[yledja]	feasts
	[ðoðja]	[ðodja]	teeth
	[xorafça]	[xorafja / xorafça]	fields
	[fsiçi]	[psiçi]	soul
	[afsixo]	[apsixo]	lifeless
	[xsenos]	[ksenos]	foreigner
	[afiloxsenos]	[afiloksenos]	inhospitable
3d. <i>Stop + Fricative</i> (SF)			
	[pçano]	[pjano / pçano]	catch, 1. Sg. PR.
3e. <i>Stop + Stop</i> (SS) * [pt], * [kt]			

⁵ The alternate forms in MG reflect a) the learned (*katharevousa*) and b) the common spoken (standard) language (*dimotiki*).

4.2. Analysis of the Obstruent Clusters in the WC Dialect

The dialect of West Crete belongs to language type 2, i.e. FS and FF clusters are allowed to surface (according to the typology in 2d). We will argue that the unmarked case for the obstruent clusters in the WC dialect are the clusters containing a fricative followed by a stop (FS clusters) and the obstruent clusters consisting of a sequence of two fricatives (FF clusters) constitute the marked case. The surface representations of these clusters do not obey to the *Sonority Sequencing Principle*, that fails to account for their occurrence. This suggests that SSP is not responsible for their construction. The shape of these obstruent clusters are regulated by a set of structural constraints (4) stated over the feature [continuant] which interact with the Faithfulness constraint (5).

(4) *Markedness constraints:*

OCP [cont]: adjacent segments with the same value for continuancy are disallowed
 *SO : a Stop followed by any Obstruent is disallowed in the WC dialect
 AGR [voicing]: the members of the clusters must share the same value for voicing.

(5) *Faithfulness constraint:*

IDENT (F manner): Identity between Input and Output correspondent for the feature value of manner (violation by assimilation/dissimilation).

The crucial Faith-constraint for the WC is IDENT(F manner) and the crucial Markedness-constraints are OCP[-cont], OCP[+cont] and *SO.⁶ The proposed constraint ranking for the WC dialect follows in (6).

(6) *Constraint ranking for the WC dialect:*

OCP[-cont] >> *SO >> IDENT(F manner) >> OCP[+cont]

The OCP[-cont] and *SO constraints must dominate the faithfulness constraint in order to prevent an input of the form SS or SF to surface in the dialect. On the contrary the faithfulness constraint IDENT(F manner) must be ranked low. As for the cluster FF, the necessary and sufficient condition that allows it to surface in the grammar is that the IDENT constraint dominates OCP[+cont].

The FF clusters of *katharevousa* Modern Greek are realised as the unmarked FS clusters in the *dimotiki* and in the (west) Crete dialect as well (7a).

(7a)	Examples:	MG	MG-dimotiki / WC-dialect
		<i>FF</i>	<i>FS</i>
		[efθis]	[eftis]
		[sxeðio]	[skeðio]

⁶ cf. Drachman & Malikouti-Drachman (1997) for Modern Greek and Cypriot.

The interconsonantal constraint OCP[+cont] prevents the input FF to surface, at the expense of the Input-Output faithfulness for the feature of [continuancy]. Given its unmarked status, the dissimilated cluster FS surfaces as a result of the constraint interaction. The relevant constraint that accounts for the neutralization of the marked FF cluster is IDENT(F manner) (7b)⁷.

(7b)

INPUT: FF	OCP [-cont]	*SO	OCP [+cont]	IDENT (Fmanner)
☞ a. FS	√	√	√	*
b. FF	√	√	*	√
c. SF	√	*	√	*
d. SS	*	*	√	**

Also in (8a) the input cluster SS of MG-*katharevousa* is realised as a FS cluster in MG-*dimotiki* and in the WC dialect as well. The marked SS clusters are neutralized to FS clusters.

(8a) Examples: MG MG-dimotiki / WC-dialect
 SS FS
 [ektimo] [extimo]

The structural constraints OCP[-cont] and the *SO prevent the occurrence of a SS cluster (or a SF cluster), thus the optimal output is the dissimilated surface representation FS (8b).

(8b)

INPUT: SS	OCP [-cont]	*SO	OCP [+cont]	IDENT (F manner)
☞ a. FS	√	√	√	*
b. FF	√	√	*	**
c. SF	√	*	√	*
d. SS	*	*	√	√

In (9a) the input representation is a SF cluster and the optimal output is a more marked representation, i.e. a FF cluster. Although a SF cluster is well-formed according to the SSP, it fails to occur in the WC dialect.

⁷ The constraint ranking is that of MG (language type 1), because MG-*dimotiki* and WC dialect share in this case the same output forms. MG-*dimotiki* neutralizes all marked obstruent clusters to FS clusters, because all markedness constraints dominate the IDENT (F manner) constraint.

- (9a) Examples: MG WC
 SF FF
 [ɣleɗja] [ɣleðja]
 [tetja] [teθça]

The above data show that both members of the cluster must share the same feature for [voicing], thus the constraint AGREE[voicing] must dominate, in order to prevent output clusters with a voice distinction. The constraint AGREE describes preferred unmarked configurations, i.e. voicing agreement in adjacent obstruents, and thus is able to trigger assimilation of obstruent voicing (Lombardi, 1999). But this unmarked configuration will only be able to surface when faithfulness constraints do not dominate. Another important point is that the AGREE-constraint is not inherently directional: the direction of assimilation will be a constraint interaction effect.⁸ The *SO constraint prevents also the occurrence of a SF cluster. These structural constraints are responsible for the output representation of the FF cluster, although it violates the interconsonantal structural constraint OCP[+con] (9b).

(9b)

INPUT: SF [tj]	OCP [-cont]	AGREE [voice]	*SO	IDENT (F manner)	OCP [+cont]
a. SF [tj]	√	*	*	√	√
b. FS [θkʰ]	√	√	√	**	*
c. FF [θç]	√	√	√	*	*

We need now to explain the behaviour of *STOP+s* clusters in the Dialect of West Crete. The SF clusters of MG are ill-formed with respect to the hierarchy defining the obstruent clusters and violate the higher ranked constraint *SO. In MG the SF clusters are repaired into the unmarked FS clusters, when created by affixation (10).

- (10) /plek + θika/ → plectika (I was knitted)

But there are monomorphemic words within the lexicon of MG, that are not neutralized to FS sequences, if the SF cluster consists of a STOP followed by an [s], e.g. *ksenos* (foreigner). Moreover [STOP + s] clusters are even created, if in a sequence of two fricatives, the second one is a [s / z]. In this case the first fricative becomes a STOP and the strident does not change (11).

- (11) [ɣraf + so] → [ɣrapso] (I write, Perfective-non Past)

⁸ see Lombardi (1997), for data and analyses.

The constraint that preserves the input [s / z], even if it would result in a violation of the *SO constraint, is the correspondence constraint *IDENT[*strident*]* and this is active in the grammar of MG. It is ranked above *SO and results in an [STOP + s] output cluster, as in the word *kse_nos*. I assume that the feature [strident] distinguishes [s / z] from all other Fricatives in Greek (cf. Lombardi, 1995). I assume that only Fricatives are specified for that feature, whereas Stops are not.

In the case of the WC-dialect a [STOP + s] cluster is realised as a FF cluster as in (12a).

(12a)	<u>MG</u>	<u>WC</u>	<u>Gloss</u>
	<i>SF</i>	<i>FF</i>	
	[psiçi]	[fsiçi]	soul
	[apsixo]	[afsixo]	lifeless
	[ksenos]	[xsenos]	foreigner
	[afiloksenos]	[afiloxsenos]	inhospitable

The examples in (12a) show that the ranking of *SO above the constraint *IDENT[*strident*]* is crucial for the dialect (Table 12b). This ranking excludes a SF cluster (candidate -a) and results in a FF cluster as the optimal output (candidate-c). The candidate (b), containing an unmarked FS cluster, loses because of the fact that the [+strident] feature which is associated with the segment [s] in the input, is not present in either segments of the output. The Fricative [x] is a [-strident] segment, whereas [t] is not specified for that feature at all. In other words, there is no correspondent of [s] in candidate (b). The candidate (c) satisfies the higher ranked constraint *SO and it is the optimal output because of the presence of a [+strident] segment in the output.

(12b)

INPUT: SF [ks]	OCP [-cont]	*SO	IDENT (strident)	IDENT (F manner)	OCP [+cont]
a. [ks]	√	*	√	√	√
b. [xt]	√	√	*	**	√
c. [xs]	√	√	√	*	*

The last example shows that a SF cluster of MG is realised also as a SF cluster in the WC-dialect, in the case of a [p + j], as in (13a), regardless of the fact that this SF cluster violates the *SO constraint.

(13a)	Examples: <u>MG</u>	<u>WC</u>
	<i>SF</i>	<i>SF</i>
	[pjano]	[pçano], *[fçano]

I assume that in this case is active a correspondence constraint that demands IDENTITY of *place / manner* of articulation among the Input labial segment [p] and the corresponding Output segment.

The IDENT[p] constraint can be used in the above data of (12a), instead of the constraint IDENT(F manner). e.g. The output [fsiçi] surfaces due to the higher ranking of *SO and the lower ranking of IDENT[p].

- (12a) [psiçi] < [fsiçi] (soul):
 *SO > IDENT(strident) > IDENT[p] > OCP[+cont]

The IDENT[p] constraint dominates the *SO constraint (Table 13b) and yields the candidate (d) as the optimal output. The candidate (c) satisfies the identity of place of Articulation (f: [+labial]), but violates the manner of articulation, being a [+continuant].

(13b)

INPUT: SF [pj]	OCP [-cont]	AGREE [voice]	IDENT [p]	*SO	OCP [+cont]
a. [pj]	√	*	√	*	√
b. [fj]	√	*	*	√	*
c. [fç]	√	√	*	√	*
d. [pç]	√	√	√	*	√

6. Conclusion

In conclusion, the Dialect of West Crete exemplifies a grammar of Type 2, in which FS as unmarked clusters and FF as marked clusters are allowed to surface, with respect to the obstruent cluster typology proposed by Morelli (1999) (contrary to the Modern Greek, which is a language type 1, cf. Morelli, 1999). The data provides also crucial evidence for the activity of the constraint *SO and the shape of the clusters are regulated by a set of markedness constraints stated over the feature [continuant] which interact with Faithfulness (in this case with the IDENT (F manner) constraint). The problematic cases which deviate from the proposed constraint ranking can be treated, if we consider a reranking of the constraints.

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