

Contrast Preservation in Dialects of North Levantine Arabic

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This paper uses Contrast Preservation Theory to account for two opaque processes in two dialects of Levantine Arabic spoken in Tripoli: (1) a Push Shift effect in a dialect spoken in traditional neighborhoods and (2) a constraint paradox in the standard dialect. Contrast Preservation Theory advances the idea that the preservation of contrast is an independent principle in the grammar, rather than a derivative of the interplay of other constraints as in standard Optimality Theory (OT; Prince & Smolensky 1993). In Contrast Preservation Theory, candidate *scenarios* (input/output mappings) compete, rather than candidate *outputs* in isolation (Flemming 1995, 1996; Padgett 1997, 2003; Lubowicz 2003, 2009).

I – Push Shift Effect: The Case of Old-Tripoli Dialect [a] Epenthesis

To avoid complex codas, Lebanese Arabic places an epenthetic vowel between the last two consonants in the word. In the Old-Tripoli dialect, this vowel is [a].

1. Examples of [a] epenthesis

Input	Output	Gloss
baħr	ba.ħar	Sea
ʔakl	ʔa.kal	Food
lamʕ	la.maʕ	Lightning
ɖarb	ɖa.rab	Beating


Thus, underlyingly CVCC words surface as CV.CaC. Words that are underlyingly CVCaC, in turn, undergo a vowel change, such that the /a/ surface as [ɔ].

2. Vowel backing in contrast-neutralizing contexts

Input	Output	Gloss
ba.ħar	ba.ħɔr	Embarked
ʔa.kal	ʔa.kɔl	Ate
la.maʕ	la.mɔʕ	Sparkled
ɖa.rab	ɖa.rɔb	Hit

These data are easily accounted for using PRESERVE CONTRAST as a constraint on scenarios, where preserving contrast (PC(V/0)) is ranked higher than maintaining the vowel quality of the input (PC(round)) and lower than the ban on complex codas.

3. Contrast Preservation Theory explanation

Scenarios	Mappings	*CC]σ	PC(V/0)	PC(round)
Faithful Scenario	ʔakl → ʔakl ʔakal → ʔakal	*!		
Contrast Neutralizing	ʔakl → ʔakal ʔakal → ʔakal		*!	
 Contrast Preserving	ʔakl → ʔakal ʔakal → ʔakɔl			*


The process /a/ → [ɔ] does *not* take place when the word is unambiguous:

4. Control cases

	Input	Output	Gloss
Epenthetic	zabɫ	Zabaɫ	Ticket
Non-epenthetic backing	zabaɫ	zabɔɫ	it got fixed
Non-epenthetic no backing	zabaɫ-lu	Zabaɫlu	it got fixed for him
Non-epenthetic no backing	zabaɫ-u-lna	Zabaɫulna	they got fixed for us

When there is a disambiguating morphological context, e.g. a verbal suffix such as {-lu}, the verb (which lacks epenthesis) is distinct from the noun (which has an epenthetic [a]), regardless of the number of suffixes.

5. No epenthetic back vowels

Scenarios	Mappings	DEP and *back	Ident-IO [vowel]
Permuted Scenario	ʔakl → ʔakɔl ʔakal → ʔakal	*!	
 Winner Scenario	ʔakl → ʔakal ʔakal → ʔakɔl		*

Constraint conjunction is used to account for the choice of the winner scenario over the permuted scenario (Moreton & Smolensky 2002).

II – A Ranking Paradox: Standard Tripoli Dialect [e] Epenthesis

This second set of data deals with an opaque process in the verbal domain:

CaCaCC → CCaCeC

CaCaCeC → CaCCeC


6. Vowel epenthesis in complex codas

Input	Tripoli Output	Gloss
Ḍarabt Ḍarabet	Ḍrabet Ḍarbet	I/you hit She hit
saʔalt saʔalet	sʔalet saʔlet	I/you asked She asked
Šalaḥt šalaḥet	Šlaḥet Šalḥet	I/you undressed She undressed
Sakabt sakabet	Skabet Sakbet	I/you poured She poured

Thus, preventing complex codas is ranked higher than avoiding epenthesis in the standard Tripoli dialect, as well (*CC|σ >> DEP).


We can conclude from the facts relating to 1st/2nd person conjugation that foot binarity is ranked higher than preserving input vowels, as tri-syllabic words drop one vowel. Thus, in standard OT terms, FtBin >> *|σ CC.

7. FtBin>>*[σ CC (Dropping a vowel)

ɖarabt (I/you hit)	FtBin	*[σ CC	DEP
ɖa.ra.bet	*!		
 ɖra.bet		*	*


It is also evident from the facts of 3rd person conjugation that foot binarity is ranked higher than the ban on complex codas.

8. FtBin>>*CC|σ


ɖarabet (she hit)	FtBin	*CC σ	DEP
ɖa.ra.bet	*!		
 ɖar.bet		*	*

The paradox arises when trying to rank *CODA with respect to *[σ CC. Based on the 1st/2nd person conjugation, we would, in standard OT, rank *CODA higher than *[σ CC, as the first vowel is deleted, resulting in a complex onset in the first syllable (as shown in 9). However, the 3rd person conjugation suggests the opposite ranking, because the second vowel in the word is deleted, resulting in a coda in the first syllable (as shown in 10).

9. *CODA>>*[σ CC (FtBin preserving strategy: drop the first vowel)

ɖarabt	*CODA	*[σ CC
ɖar.bet	*!	
 ɖra.bet		*

10. *[σ CC >>*CODA (FtBin preserving strategy: drop the second vowel)

ɖarabet	*[σ CC	*CODA
ɖra.bet	*!	
 ɖar.bet		*

While these data constitute a paradox in standard OT, the issue is straightforwardly resolved using *Tokenized Markedness* in Contrast Preservation Theory (Lubowicz 2003). For a given output O_i that violates some constraint, O_i scores one violation of Tokenized Markedness for every input (in a given scenario) that maps onto it.

11. Tokenized markedness: Two scenarios

Coda Scenario	Complex onset Scenario
1 st pers. CaCaCC → CaCCeC	1 st pers. CaCaCC → CCaCeC
2 nd pers. CaCaCC → CaCCeC	2 nd pers. CaCaCC → CCaCeC
3 rd pers. CaCaCeC → CCaCeC	3 rd pers. CaCaCeC → CaCCeC

In the coda scenario: Two inputs (1st/2nd person) map onto the output violating *CODA, and one (3rd person) maps onto the output violating *[σ CC.

In the complex onset scenario: Two inputs (1st/2nd person) map onto the output violating *[σ CC, and one input (3rd person) maps onto the output violating *CODA.

This allows us to rank the two constraints based on which of the two scenarios is chosen.

12. Resolving the paradox: *CODA>>*[σ CC

Scenarios	Mappings	*CODA	*[σ CC
Coda Scenario		**!	*
Complex Onset Scenario		*	**

Having resolved the ranking paradox, we can provide a Contrast Preservation Theory explanation for the winning scenario, rather than a scenario in which all inputs map onto the same output:

13. Contrast Preservation Theory explanation

Scenarios	Mappings	PC	*CODA	*[σ CC
Contrast neutralizing		*!		***
Contrast preserving			*	**

Contrast Preservation Theory thus provides a straightforward account to both sets of data. In the Old Tripoli dialect, it resolves the issue of why the same morpheme behaves differently depending on whether it is ambiguous or has a disambiguating phonological context, and in the standard Tripoli dialect, it resolves a ranking paradox.

Selected References:

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