Assimilation in Sudanese Colloquial Arabic

Inventories and contrast

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March 3, 2016

Anatomy of the presentation

1. Main idea
   - Introduction
   - Inventory
   - Adaptation of words from Standard Arabic

2. Data
   - Part 1
   - Part 2
   - Part 3

3. Analysis
   - CC at a morpheme boundary
   - The case of pharyngeals
   - /l/ sensitivity to boundary type

Introduction

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- At these boundaries, SCA has a few strategies for repairing a sequence of CC, one of which we will primarily focus on in this problem set.

- To understand the data, the reader will have to consider what is relevant or irrelevant for establishing a contrast between certain sounds in SCA.

Inventory

- Stops $/b, t, t^\Upsilon, d, d^\Upsilon, k, g, (q), \Upsilon/$

Inventory

- Stops   /b, t, tˤ, d, dˤ, k, g, (q), ʔ/
- Fricatives   /f, θ, ð, s, z, sˤ, zˤ, ʃ, x, ɣ, ħ, ʕ/

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- Affricates   /d͡ʒ/

Inventory

- Stops
- Fricatives
- Affricates
- Nasals

/b, t, tˤ, d, dˤ, k, g, (q), ʔ/

/f, θ, ð, s, z, sˤ, zˤ, ʃ, x, ɣ, ħ, ʕ/

/d͡ʒ/

/m, n/

Inventory

- Stops   /b, t, tˤ, d, dˤ, k, g, (q), ʔ/
- Fricatives   /f, θ, ð, s, z, sˤ, zˤ, ʃ, x, ɣ, ħ, ʕ/
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- Nasals   /m, n/
- Trill   /r/

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- Trill   /r/
- Approximates   /w, l/

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Adaptation of words from Standard Arabic

- What makes looking at these CC clusters interesting is that they are generally not preferred in SCA.

SA	SCA	
baħr	baħar	'sea'
d͡ʒard	d͡ʒarid	'inventory'
rasm	rasim	'drawing'
ʃatl	ʃatil	'planting'
ɣazl	ɣazil	'spinning'
kalb	kalib	'dog'
masx	masix	'mishappening'
nasˤr	nasˤur	'victory'
nafs	nafis	'soul'

Overview

Going beyond monomorphemic words, we find many places where we have two consonants adjacent to each other.

1. N + Adj
2. N + V
3. N + N
4. Root + suffix

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1. N + Adj
2. N + V
3. N + N
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Voicing assimilation!

/burud͡ʒ/	'tower'
burut͡ʃ taani	'a second tower'
burut͡ʃ samiħ	'a beautiful tower'
burut͡ʃ kabiir	'a big tower'
burut͡ʃ xaamis	'a fifth tower'
burut͡ʃ ħadiis	'a new tower'
burut͡ʃ haayil	'a wonderful tower'
burud͡ʒ gadiim	'a old tower'
burud͡ʒ latˤiif	'a nice tower'
burud͡ʒ maayil	'a inclined tower'
burud͡ʒ waahid	'one tower'

Voicing assimilation?

/mudarris/   'teacher'

mudarriz baʕiid   'a far away teacher'
mudarriz daayim   'a permanent teacher'
mudarriz zaki   'an intelligent teacher'
mudarriz d͡ʒadiid   'a new teacher'
mudarriz gisˤayyar   'a short teacher'
mudarriz ɣariib   'a strange teacher'
mudarriz ʕasˤabi   'a nervous teacher'

mudarris samiħ   'a beautiful teacher'
mudarris kariim   'a generous teacher'
mudarris laʔiim   'a wicked teacher'
mudarris naadya   'Nadia's teacher'
mudarris wannaas   'a storyteller teacher'
mudarris ribiħ   'a teacher profited'

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And the plot thickens...

/balad/	'country'
balat fihim	'a country understood'
balas simiʕ	'a country heard'
balaʃ ʃaaf	'a country saw'
balaz ziʕil	'a country got angry'
balad͡ʒ d͡ʒaab	'a country brought'
balat xirib	'a country was ruined'
balat ħaarab	'a country fought'
balad liʕib	'a country played'
balad malak	'a country owned'
balad wazzaʕ	'a country distributed'
balad ribiħ	'a country profited'

Taking stock

So from this it looks like we have three things going on.

1. voicing assimilation
2. voicing assimilation, but not with [l, r, m, n, w]
3. total assimilation

Total assimilation

In the following paradigms, we get cases of total assimilation, and we have the following sets of alternants:

- bit/bid — 'girl' $\{s, z, \widehat{d\mathfrak{z}}, \int, t, d\}$
- kitaap/kitaab — 'book' $\{p, f, b\}$
- sawwaak/sawwaag — 'driver' $\{k, g, x, \gamma\}$
- balat/balad — 'country' $\{s, z, \widehat{d\mathfrak{z}}, \int, t, d\}$
- walat/walad — 'boy' $\{s, z, \widehat{d\mathfrak{z}}, \int, t, d\}$
- samak/samag — 'fish' $\{k, g, x, \gamma\}$

And we don't get assimilation in these:

- mudarris/mudarriz — 'teacher' $\{s, z\}$
- deef/deev — 'guest' $\{f, v\}$
- buru$\widehat{d\mathfrak{z}}$/bur$\widehat{t\int}$— 'tower' $\{\widehat{d\mathfrak{z}}, \widehat{t\int}\}$
- $\int$eex/$\int$eeγ— 'sheik' $\{x, \gamma\}$

Two things to note:

1. Elements in the CC cluster form a set, so they share some property. Intuitively, it's the place of articulation.

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   $\{$s, z, $\widehat{d_3}$, ʃ, t, d$\}$ = alveolar, $\{$p, f, b$\}$ = labial, $\{$k, g, x, ɣ$\}$ = velar

2. We can look at what elements undergo this process when they are the first consonant of the cluster. Observe that some elements which don't meet the standard to undergo total assimilation are in the set of elements that may meet that standard, so we can eliminate them.

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   {s, z, d͡ʒ, ʃ, t, d, p, f, b, k, g, x, ɣ} and {l, r, n, m, w}

We have four sets that characterize consonant clusters of $C_1 C_2$:

1. Elements that can be C_2 {s, z, d͡ʒ, ʃ, t, d, p, f, b, k, g, x, ɣ}
2. Elements that can't be C_2 {l, r, m, n, w}
3. Elements that can be C_1 {b, p, k, g}
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- Intuitively, the first contrast has something to do with sonorancy or voicing.

We have four sets that characterize consonant clusters of $C_1 C_2$:

1. Elements that can be C_2 {s, z, d͡ʒ, ʃ, t, d, p, f, b, k, g, x, ɣ}
2. Elements that can't be C_2 {l, r, m, n, w}
3. Elements that can be C_1 {b, p, k, g}
4. Elements that can't be C_1 {s, t, z, ʃ, d͡ʒ, x, ɣ}

- Intuitively, the first contrast has something to do with sonorancy or voicing.
- Intuitively, the second contrast has something to do with manner of articulation.

Our first rule

1 <u>Oral stop assimilation:</u>

oral stop $\begin{bmatrix} \alpha_{place} \\ \beta_{voice/son} \end{bmatrix} \rightarrow$ non-stop $\Big/$ _____ $C \begin{bmatrix} \alpha_{place} \\ \beta_{voice/son} \end{bmatrix}$

Back to voicing

- <u>Problem</u>: We see an alternation between voiced and voiceless sounds preceding [l, r, m, n, w], which are voiced.
- <u>Question</u>: Do [l, r, m, n, w] have voiceless counterparts?

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  No!

- <u>Question</u>: Would it be unreasonable to posit that these segments aren't contrastive with respect to voicing?

  I don't think so.

Now, we can list the set of forms that occur in each environment. Note that we've excluded [l, r, m, n, w] as an environment for where we see a voicing alternation.

CC voice	[l, r, m, n, w]	CC no voice
kitaab	kitaab	kitaap
sawwaag	sawwaag	sawwaak
balad	balad	balat
ʃeeɣ	ʃeex	ʃeex
mudarriz	mudarris	mudarris

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sawwaag	sawwaag	sawwaak
balad	balad	balat
ʃeeɣ	ʃeex	ʃeex
mudarriz	mudarris	mudarris

Since the [l, r, m, n, w] environment is where we see unpredictability, we can posit the forms seen here as the ones we find underlyingly.

Voicing assimilation!

- Now, disregarding the unpredictable environment, we find two sets of sounds the pattern together.

  {b, d, z, d͡ʒ, g, ɣ, ʕ} and {f, t, s, ʃ, k, x, ħ}

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- We observe that the members in each set have some shared property: voicing.

Our second rule

2 Voicing assimilation:

$$C[\alpha_{voice}] \rightarrow C[\beta_{voice}] \big/ \underline{\hspace{1.5cm}} C[\beta_{voice}]$$

Our second rule

2 Voicing assimilation:

$$C[\alpha_{voice}] \rightarrow C[\beta_{voice}] \Big/ \underline{\hspace{2cm}} C[\beta_{voice}]$$

Note that since we have considered [l, r, m, n, w] to be not specified for voice, we can use that in our other rule.

Our second rule

2 Voicing assimilation:

$$C[\alpha_{voice}] \to C[\beta_{voice}] \Big/ \underline{\hspace{1cm}} C[\beta_{voice}]$$

Note that since we have considered [l, r, m, n, w] to be not specified for voice, we can use that in our other rule.

1' Oral stop assimilation:

$$\text{oral stop} \begin{bmatrix} \alpha_{place} \\ \beta_{voice} \end{bmatrix} \to \text{non-stop} \Big/ \underline{\hspace{1cm}} C \begin{bmatrix} \alpha_{place} \\ \beta_{voice} \end{bmatrix}$$

Reflecting

1. <u>Place</u>:

   Intuition: members of each set share place of articulation.

   Sets: $\{$s, z, $\widehat{dʒ}$, ʃ, t, d$\}$, $\{$f, b$\}$, $\{$k, g, x, ɣ$\}$

   Justification: condition on total assimilation

2. <u>Manner</u>:

   Intuition: members of each set have a similar manner of articulation.

   Sets: $\{$b, t, d, k, g, ʔ$\}$, $\{$f, s, z, ʃ, $\widehat{dʒ}$, x, ɣ, ħ, ʕ$\}$

   Justification: stating target for total assimilation

3. <u>Voicing</u>:

   Intuition: members of each set share voicing.

   Sets: $\{$b, d, z, $\widehat{dʒ}$, g, ɣ, ʕ$\}$, $\{$f, t, s, ʃ, k, x, ħ$\}$, $\{$l, r, m, n, w$\}$

   Justification: condition on both rules

Pharyngeals

/balaħ/	'dates'
balaħ barakaawi	'brakawi dates'
balaħ duŋgulaawi	'dunglawi dates'
balaħ zaayid	'extra dates'
balaħ d͡ʒayyid	'good dates'
balaħ gadiim	'old dates'
balaħ ɣaali	'expensive dates'
balaʕ ʕiraaqi	'Iraqi dates'
balaħ samiħ	'good dates'
balaħ katiir	'many dates'
balaħ laziiz	'sweet dates'
balaħ masˤri	'Egyptian dates'
balaħ nuur	'Nur's dates'
balaħ waarid	'imported dates'

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Wait, what?

- Question: Why doesn't [ħ] participate in the voicing alternation?

The great divide

- We have data that suggests we need something to capture the contrast between these two sets of sounds:

  {b, f, t, d, s, z, ʃ, d͡ʒ, k, g, x, ɣ} and {ħ, ʕ}

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  $\{b, f, t, d, s, z, \int, \widehat{d\mathfrak{z}}, k, g, x, \gamma\}$ and $\{\hbar, \Omega\}$

- So, we'll say that the latter are emphatic and the former non-emphatic.

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- So, we'll say that the latter are emphatic and the former non-emphatic.
- We also have to update our voicing assimilation rule to account for these forms.

2' <u>Voicing assimilation</u>:

$$C \begin{bmatrix} \alpha_{voice} \\ \gamma_{emph} \end{bmatrix} \rightarrow C[\beta_{voice}] \Big/ \underline{\hspace{1cm}} C \begin{bmatrix} \beta_{voice} \\ \gamma_{emph} \end{bmatrix}$$

What we've posited

1. Place:

   Intuition: members of each set share place of articulation.

   Justification: condition on total assimilation

2. Manner:

   Intuition: members of each set have a similar manner of articulation.

   Justification: stating target for total assimilation

3. Voicing:

   Intuition: members of each set share voicing.

   Justification: condition on voicing rule

4. Emphasis:

   Intuition: emphasis (pharyngealization) matters to the phonology.

   Sets: {b, f, t, d, s, z, ʃ, d͡ʒ, k, g, x, ɣ} and {ħ, ʕ}

   Justification: condition on voicing rule

ʔaʃ ʃamis	'the sun'
ʔat tamur	'the dates'
ʔad daris	'the lesson'
ʔas samak	'the fish'
ʔaz zaman	'the time'
ʔan nimir	'the tiger'
ʔar raad͡ʒil	'the man'
ʔal faar	'the mouse'
ʔal bit	'the girl'
ʔal gamar	'the moon'
ʔal kalib	'the dog'
gulta	'you (m.) said'
biʕta	'you (m.) sold'
ʃuɣulna	'our job'
xufti	'you (f.) feared'

Thank you!