Announcements

• Reminder: Language and Technology Symposium, this Friday March 9, from 12:15 to 4pm, at Axinn 229.

• Online keyboard for phonetic transcription:

Agenda

• Articulatory processes: Assimilation and epenthesis in Arabic.
• Syllable structure in Arabic.
• Resolving some puzzles.
• Stress placement in Egyptian Arabic.

Speech production and coarticulation

Speech production and coarticulation

• So far, we described sounds as if they are articulated in isolation. Of course, this is not the case in connected speech. Sounds are typically produced while more than one articulator is active.
• As a result of this coarticulation, sounds may get to affect neighboring sounds in speech (as we've seen in emphaticness for example).
• These are called articulatory processes. We discuss a few examples here from Arabic.

Assimilation

• Assimilation is an articulatory process whereby a sound is made “similar” to a neighboring sound.
• Vowel emphaticness in Arabic is an instance of assimilation:
  حصن [hisʔa:n]  حناء [ʔa:ʔirah]

ARBC0225/LNGT0225
Arabic Linguistics

Lecture #7
March 7th, 2012
Pronunciation of the definite article 

- The definite article prefix in Classical Arabic is /ʔal/:  
  /ʔal+ba:b/ → [ʔalba:b] “the door”  
  /ʔal+kita:b/ → [ʔalkita:b] “the book”  
  /ʔal+qamar/ → [ʔalqamar] “the moon”  
  /ʔal+ʔasal/ → [ʔalʔasal] “the honey”

But now consider these examples:  
/ʔal+tamr/ → [ʔattamr] “the dates”  
/ʔal+[ ]ams/ → [ʔa[ ]ams] “the sun”  
/ʔal+rabb/ → [ʔarrabb] “the god”

So, what’s going on here?  
- Assimilation of the /l/ of the definite article to the initial consonant of the noun.

Assimilation of the definite article 

- Why do the so-called ‘sun’ letters cause assimilation of the /l/ of the definite article, but the ‘moon’ letters do not?

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<th>/l+ الرهب الشمسي</th>
<th>/l+ الرهب القمري</th>
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| ط آ أ | ت ع ع
| د ج ح ف ك م ه و | ق م|

‘Sun’ and ‘Moon’ sounds

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<th>Sound</th>
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Assimilation in Irbid Urban Arabic

- These are pronunciations from Irbid Urban Arabic in Jordan. What do you think is going on here?
  a. /faat dukkaamah/ → [faad dukkaamah] “he entered a store”  
  b. /bariid taarix/ → [barrit taarix] “historical mail”  
  e. /kiizi zatun/ → [kiiz zatun] “a sack of olives”  
  f. /muuz suuri/ → [muus suuri] “Syrian bananas”

- Why do the so-called ‘sun’ letters cause assimilation of the /l/ of the definite article?  
- They share the property of being articulated with the front part of the tongue, just as /l/ is. In phonetics, these are all called coronal sounds (as opposed to labial and dorsal sounds).  
- In Arabic, only coronal sounds cause assimilation of the /l/ of the definite article.
More assimilation

• The word دُنْب (ذَنْب = 'guilt') is typically pronounced as [ḏamb].
• Why?

The 丹麦 of 丹麦 puzzle revisited

• 丹麦 is a verbal pattern. We see it in verbs like استمع and التحق. But sometimes its ت does not actually appear as ن. For example:
  • Arabic has the root ز-ح-م، which means 'crowdedness.' When we want to form a verb of the افعل pattern, we should expect ابتجم. But we actually get ازدحم (from which we have ازدحام).
    [ʔiztahama] → [ʔizdahama]
    (by assimilation in voicing with the first consonant of the root)

The 丹麦 丹麦 puzzle revisited

• With other roots, the ت surfaces as ط via assimilation in the emphatic feature of the first consonant of the root. For example, with the root ص-د-م، which means 'collision':
  • ص-د-م ←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←→
Epenthesis

• In Egyptian Arabic, epenthesis is used whenever three consonants are potentially next to one another within a word.
• For example:
  [ʔult + lak] → [ʔult-i-lak]
• Iraqi Arabic also prohibits three consonants in a row, but it applies epenthesis in a different way:
  [gilt + lak] → [gil-i-t-lak]

Epenthesis in loan words

• In Classical Arabic and many of today’s dialects, a sequence of two initial consonants is not allowed.
• As a result, when a foreign word is borrowed into an Arabic dialect with an initial consonant cluster, a vowel is typically epenthesized to break the consonant cluster.
• These are examples from Egyptian Arabic:
  studio is pronounced [ʔistudju:]
  Sprite is pronounced [ʔisberajt] or [ʔizberajt]

Syllable structure

• Sounds combine to form larger units called **syllables**.
• A syllable must contain a **nucleus** (typically a vowel) and may also contain consonants before or/and after the nucleus.
• The consonants before the nucleus vowel are called the **onset** of the syllable, whereas the consonants after the vowel are referred to as the **coda** of the syllable. The nucleus and coda are also assumed to form one unit called the **rhyme**.

Syllable structure in Classical Arabic

• For example, a word such as مصْرِ [mıs′r] has [s] as nucleus, [m] as onset, and [s′r] as coda.
• The structure of this syllable is **CVCC**.
Phonotactics

• Every language has certain constraints on the form of its syllable structures. These are called phonotactic rules (or simply phonotactics).

Syllable structure in Classical Arabic

• One phonotactic constraint in Arabic is that every syllable must have an onset. This means that no syllable can start with a vowel.

• Codas are optional though. For example, the word [fi:] has an onset, but no coda, and the structure of the syllable is CVV.

Important Note: VV indicates a long vowel, not two vowels. Arabic never allows two vowels in a row.

Syllable structure in Classical Arabic

• Now, let's consider the syllable structures in the word كنتت [ka.tab.ta] (Note: We mark the boundary between two syllables by a dot.)
  - ka: CV
  - tab: CVC
  - ta: CV

Syllable structure in Classical Arabic

• Now consider the word مصريون [musir.ʔu:n], which has multiple syllables. What are they? And what's the structure of each?
  - [mus], which has a CVC structure.
  - [rij], which has a CVC structure.
  - [ju:n], which has a CVVC structure.

Note: Remember that VV does not indicate two vowels, but simply a long vowel. Arabic never allows two vowels in a row.

Light, heavy, and superheavy syllables

• Classical Arabic thus has five syllable structures only: CV, CVC, CVV, CVCC, and CVVC.

• The five structures are typically grouped into three syllable types:
  - CV is called a light syllable.
  - CVC and CVV are called heavy syllables.
  - CVCC and CVVC are called superheavy syllables, and may only occur in word-final position (another phonotactic).

• These distinctions will be important for understanding the placement of stress in Classical Arabic as well as other dialects. For now, let's revisit some puzzles from earlier in the semester.

The puzzle of the hollow verbs

الفعل الأحوف

• عاش
  - أنا عشت
  - أنت عشت
  - نحن عشنا
  - أنتم عشتم

لكن:

• هو عاش
       • هي عاشت
       • هم عاشوا

لكن:

• هُنَّ عاشن (هنالك).
It’s all about syllabification and phonotactics!

• Consider:
  
  عاش هو عاش 
  [ʕa:.ʃa] 
  [ʕa:.ʃ.ta]

• Similarly:
  عشت أنت 
  [ʕiʃ.ta] 
  [ʕa:ʃ.ta]

• WHYN

---

The puzzle of geminated verbs

• أنا أحببت أنت أحببت 
  [ʔanta] 
  [ʔanta]

• ددعنا 
  [ʔiʃ.na] 
  [ʔa:ʃ.na]

• WHY?

---

A new puzzle: CLA vs. EA

• In both Classical Arabic and Egyptian Arabic, the word for ‘book’ is كتَ adviser [kita:b]

• But كتَ adviser ‘their book’ is pronounced differently in both dialects.
  
  CLA: kita:b + a + hum → [kitaba:hum]
  EA: kita:b + hum → [kitabhum]

• WHY?

---

A new puzzle: CLA vs. EA

• Let’s syllabify every pronunciation and see if we can make sense of the contrast.

  CLA: [ki.ta:.ba.hum]
  EA: [ki.ta:b.hum]

• Remember superheavy syllables can only occur in word-final position. Since [ta:b] is superheavy, EA salvages the problem by shortening the long vowel.

• This is called the Closed Syllable Shortening rule. It happens in Egyptian and several other Arabic dialects.

---

A new puzzle: CLA vs. EA

• Now guess how كتبكم is pronounced in both dialects.

  CLA: kita:b + a + kum → [ki.ta:.ba.kum]
  EA: kita:b + kum → [ki.ta:b.kum] → [kitabkum]

Closed Syllable Shortening
The plot thickens

- Now guess how كتابك is pronounced in both dialects.
  
  CLA: kita:b + a + k \(\rightarrow\) [ki.ta:.bak]
  EA: kita:b + ak \(\rightarrow\) [ki.ta:.bak]

Closed Syllable Shortening

- Egyptian Arabic avoids the occurrence of a potential superheavy syllable word-medially by shortening the long vowel of that syllable:
  - [a:] becomes [a],
  - [u:] and [o:] become [u], and
  - [i:] and [e:] become [i].

Revisiting epenthesis

- Now, let’s revisit the epenthesis facts from earlier in light of our understanding of syllable structure.
  - Egyptian:
    قلت لك [ʔult + lak] \(\rightarrow\) [ʔult.lak] \(\rightarrow\) [ʔul.ti.lak]
  - Iraqi:
    قلت لك [gilt + lak] \(\rightarrow\) [gilt.lak] \(\rightarrow\) [gi.li.tak]
  - It’s all about syllabification and phonotactics.

Next class agenda

- Stress placement.
- The phonology of the dialects.