- **Check-in: Source/filter model**
- **Introduction to Lab #04**

Background preparation:

- *Prep questions 09.12*
- *Lab #03*

0. Today's objectives

After today's class, you should be able to:

- Understand, diagram, and explain the contributions made by the **glottal source wave** and the **vocal-tract filter** to the **components** of the neutral-vocal-tract vowel [ə]
- Use information from a Praat **spectral slice** in order to determine the **resonance frequencies** of a tube
- **Talk with a classmate** about course material and lab assignments

0. Mindset

- When you are working on **prep questions** and **lab assignments**, use the opportunity to
  - Reflect on **past course material** to see what connections you can make / what you can apply
  - (Mostly for prep questions:)
    Review any **assigned readings or activities** and see what new information might be relevant
- If you review the course material (especially outline slides) and you find that you still have questions, please talk to me before you fall behind

1. Review: Source-filter model

- The shape of a complex wave depends on the _____ and _____ of its components

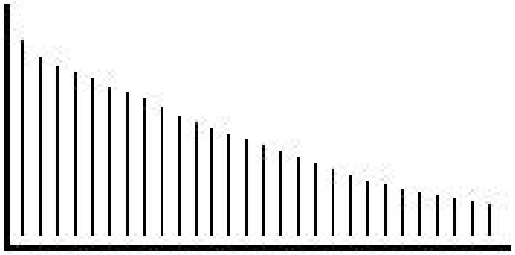
- We can represent this information about the components in terms of a diagram known as a _____

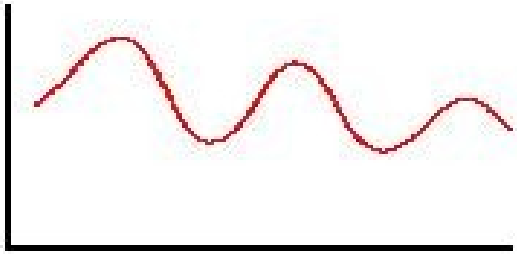
1. Review: Source-filter model

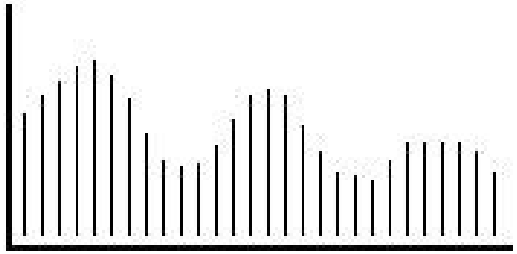
- In the source/filter model of speech acoustics,
  - the _____ of the components are determined by the source
  - the _____ of the components are determined by the filter

1. Review: Source-filter model

- What do we see in these images? (K. Russell, U Manitoba)







1. Review: Source-filter model

Prep questions 09.12 (#4)

- Imagine a speaker whose vocal tract is 17.5 cm long, with the speed of sound in air at 350 m/sec (the scenario we discussed in class). Which of the following are plausible for this speaker to produce?
  a. [ə], first 3 components at 100, 200, 300 Hz
  b. [ə], first 3 components at 100, 300, 500 Hz
  c. [ə], first 3 components at 120, 240, 360 Hz
  d. [ə], first 3 resonances (formants) at 100, 300, 500 Hz
  e. [ə], first 3 resonances (formants) at 500, 1000, 1500 Hz

2. Check-in: Lab #03

- How do we look at the shape of a wave in Praat?
  - Does the wave shape give us reliable information about tube length? Boundary conditions?
  - True or false: If a tube is closed at one end, one end of the sound wave it produces will not be at zero on the waveform
- How do we decide if we are looking at a tube that is open/closed or open/open?
  - What do we look at in Praat?
  - What characteristic tells us the difference?

3. Getting started on Lab #04

- Canvas is not open yet!
- Use the remaining time in class today to talk in your discussion group as you use the lab handout and the sound files to get started figuring out the lab questions
- Talk to your groupmates! Share the questions that you may have!