

Linguistics 103  
Keating/VanWagenen  
Spring 2007

Assignment #3  
Listening to a text-to-speech synthesizer  
Due in sections Week 9

This assignment is to be done on any Macintosh computer, including those in the CLICC lab in Powell. Powell also has Mac laptops that can be checked out (inside the Reading Room; see [http://www.clicc.ucla.edu/laptops\\_whatyouneed.asp](http://www.clicc.ucla.edu/laptops_whatyouneed.asp)). It can be done on a home Mac, but it cannot be done on a PC, as it requires the proprietary Mac text-to-speech (TTS) software within OSX.

Many computers come with TTS capability - they can read text out loud. On Macs, one way to use TTS is with the "TextEdit" program. To open TextEdit in the CLICC lab, go under the "Go" menu to "Applications" and scroll down to "TextEdit". This gives you a text window; type something into the window, then select it. To hear it spoken by the computer, go under the "Edit" menu to "Speech" to "Start speaking". (Unfortunately there is no keyboard shortcut for this command.)

The Apple TTS system used by TextEdit has several different voices available. To see the voices and to select one, go to the "System Preferences" by finding the apple icon at the upper left of the screen. Then click "Speech", then Text to Speech if it is not already highlighted, then look under "System Voice". Look at the list of voices available. "Bruce" and "Victoria" are based on real people from UCLA. Most of the other voices, including "Fred" and all the ones with funny names, are not based on real people but instead are completely generated by rule, and are basically special effects produced by changing the voice source (like weird laryngeal transplants). Take a minute to try out a few of the different voices. (You don't need to use TextEdit for this; you can listen to the samples in System Preferences. But if you want to hear the same text by each voice, keep the Default Voice window and the TextEdit window both open, and switch between them.)

For the assignment, select as the default the "Bruce" voice, which is based on the voice of Prof. Bruce Hayes of our department. This voice is "based on" our Bruce in the sense that the speech is produced by combining small pieces of recordings of his voice, about one per segment. But the designers of the TTS system still had to decide how words would be pronounced (what phonemes and recorded segments to use in any given word) and what the suprasegmentals should be like. As a result, for short words the TTS voice "Bruce" will probably sound a lot like the real Bruce, but for sentences it will sound noticeably different.

Prof. Bruce Hayes is also the male American voice of our textbook CD. Thus we can directly compare RealBruce on the CD with TTSBruce saying the same utterances. To do this, it might be convenient to have the CD (or the corresponding website, <http://www.phonetics.ucla.edu/course/contents.html>) open on another computer, and TextEdit open on a Mac. To practice, listen to some of RealBruce's vowels in CD 2.2, and then type the same words for TTSBruce to say.

The assignment asks about phonetic and phonemic comparisons of the two voices.

YOUR NAME:

SECTION:

1. In CD 1.5, RealBruce says 3 minimal pairs for stress in English (nouns vs. verbs).

**Questions: Does TTSBruce produce these pairs with correct stress when you include “a” or “to”? Which is the system’s default when you do not include “a” or “to” - the noun form or the verb form?**

2. In CD 3.9, RealBruce pronounces 3 words with tapped allophones of /t/. **Question: Does TTSBruce have taps in those words?**

3. In CD 4.1, RealBruce reads triplets with stressed, unstressed, and reduced (schwa) vowels. **Question: Are any of these words pronounced differently by TTS Bruce?**

4. In CD 4.2, RealBruce says some words in which he has an /ɔ/ phoneme. **Question: Does TTSBruce have the same vowel in those words?**

5. In CD 5.1, RealBruce says the phrase “to Mexico” with a reduced pronunciation of “to” (it’s transcribed as [t] plus schwa, but in fact there is no voiced vowel, only a voiceless one, that is, an aspirated /t/). **Question: How does TTSBruce pronounce “to” in “to Mexico”? Does this change when the phrase “to Mexico” is embedded in a sentence? Provide an example in support of your answer.**

6. In CD 5.8, Real Bruce reads a pair of sentences in which the stress in the word “unknown” varies depending on the rhythm of the surrounding phrase. **Question: Does TTSBruce say “unknown” with these 2 different stress patterns in these 2 sentences?**