Digitizing, Editing & Aligning Recordings

[Sony Sound Forge]

1. Objective

The objective of this session is to learn about what can be accomplished using audio software designed for working with sound, which we will use for doing research on spoken discourse. We will learn about how to:

- edit sound, including defining regions of sound and annotating them (Sound Forge)

- aligning each intonation unit in a transcription with the corresponding audio (Sound Forge or Transcriber)

2. Sound Forge

This software allows you to edit and play back sound files. It will make permanent changes in your sound files (although there is a partial undo function), so it is best to work with a **copy** of your sound file. The software is primarily designed for people who work extensively with editing sound (like musicians and sound editors who do "post-production" editing for film and television). It is useful to linguists because it is very fast and very capable in dealing with very large audio files (and video too), and because it is ergonomically very efficient. Some of the features intended for sound editors can be put to use for the transcriber's purposes.

3. Starting Sound Forge

1. To start the **Sound Forge** program, click on its icon. (If the Sound Forge program has not been installed on your computer, you will first need to install it. If you need assistance in installing Sound Forge on your computer, ask for help.)

2. From the menu, select **File/Open**. Go to the following **Ling212** (or equivalent) directory, select go to the following directory, and select an audio file from those listed:

   \Data\English\Audio\SBCorpus

3. You will see a waveform of the audio file.

4. Setting the Options

1. You should begin by setting some of the Sound Forge options to suit your task.

2. We will want to measure time in our recordings based on seconds (e.g. number of seconds of elapsed time from the beginning of your recording file). To set the time measurement standard to seconds, select **Options/Status Format** from the main menu, then select **Seconds**.

3. Make sure the Regions List and Playlist are displayed. If they are not, from the menu select **View**, then select **Regions List**. Then select **View** again, and select **Playlist**.

4. From the menu, select **Options/Preferences/Playlist**. For Regions List display format, select **Start and length**. For Playlist display format, also select **Start and length**. Make sure the box is checked for **Sort the Regions List alphabetically**.

5. Using Sound Forge

Some useful functions in Sound Forge are the following:

1. You can play sound by clicking on the appropriate location in any of the three panels: in the waveform display, in the regions list, or in the playlist.

2. To **select** a portion of the **waveform**, drag the mouse across it to highlight it

3. To **play** the current highlighted sound, press the **spacebar**.

4. To highlight the sound **between two lines**, double-click anywhere between the lines.

5. To **move** the cursor to a particular **time** in your sound file, press **<CTRL>g**, and then type the time you want (in seconds) in the dialog box.

6. To **select** the sound in a particular **region**, click on the region label. (You should have the Regions List displayed to do this.) You can then **play** the region using the **spacebar**.

7. To **play** the sounds in the **Playlist**, click on any line of the playlist, and then press the **spacebar**. The cursor will move down through each line of the playlist, while playing the corresponding sound.

8. To **create** your own playlist, use the mouse to **drag items** from the **Regions List**, one at a time, over to the **Playlist**. You can arrange them to be played in any order you like, just by dragging them to a new position. (Note that modifying the Playlist in this way does not modify the original recording file.) [NOTE: Sound Forge Audio Studio lacks the Playlist function.]

9. To **jump** the **cursor** (in the waveform display) from your current position to the **following dotted line** (i.e. to the next region line or marker line), press **<CTRL><RIGHT-ARROW>**.

10. To **jump** the cursor from your current position to the **previous dotted line** (i.e. region line or marker line), press **<CTRL><LEFT-ARROW>**.

11. To **highlight** from the current cursor position to the **following dotted line**, press **<CTRL><SHIFT><RIGHT-ARROW>**.

12. To **highlight** from the current cursor position to the **previous dotted line**, press **<CTRL><SHIFT><LEFT-ARROW>**.

13. To mark a portion of the sound as a **region** (which allows you to name it, transcribe it, and return to it later), **highlight** a portion of the waveform, and then press **r**. (Just plain **r**). When the dialog box comes up, assign the region a name. If your region consists of one intonation unit, for example, you could let the first part of the region name be the beginning time for the intonation unit (which Sound Forge automatically provides), and the rest of the name can be the speaker label followed by a transcription of the words spoken.

14. To **mark** the location of a reference point in your recording, place the cursor where you want to leave a **marker**, and press **m**. (Just plain **m**). You may find it useful to use markers as temporary reference points as you are aligning the intonation units in your recording using **Regions**. Once you are done identifying the Region, you can delete your (temporary) markers if you like.

15. To **copy** an excerpt from a longer audio file into a new audio file, first **highlight** the portion you are interested in. Then copy this sound to the Windows clipboard by selecting **Edit/Copy** from the menu (or just press **<CTRL>c**). Then, from the menu select **Edit/Paste Special/Paste to New** (or just press **<CTRL>e**). This will create a new, smaller file, containing just the sound you have selected.

16. To **undo** the last action, from the menu choose **Edit/Undo** (or press **<CTRL>z**.

17. To **save** your changes (including any regions or playlists you may have created), select **File/Save** (or press **<CTRL>s**). [NOTE: In Sound Forge Audio Studio, each time you save your file, you lose the ability to undo previous changes. In the full version of Sound Forge, you can undo even after saving.]

6. Creating a Time-Aligned Transcription

18. After you have experimented with the existing examples in English, you should try creating regions in your own audio file. From the menu, select **File/Open**. Go to your directory, and select your audio file. (Remember to make a copy of the file first, to safeguard your data.)

19. It is useful to define a separate region for each intonation unit in your audio file. It is also useful to define a separate region for each pause. This is also a good way to measure the duration of the pauses in your data. (Be sure to do all this work in your Research Segment file; see the Appendix on "Transcribing Procedures" for discussion.)

20. If you drag each of the regions you have defined into the playlist (using the mouse), you can have Sound Forge scroll through the playlist as it plays each intonation unit in sequence.

21. Depending on how you have set up the regions in your recording, you may find that overlapping speech is played twice. By experimenting with setting up additional regions (e.g. for just the *non-overlapped* portion of an IU), you can find a way to have your Regions play back your recording in the right sequence, with your transcription automatically scrolling along with the playback.

22. Note that Sound Forge can be used for editing the audio portion of video files, not just audio files. (It shows the video as it plays, too.)

7. Defining Regions automatically

You may be able to use Sound Forge to automatically define regions in your recording. Sound Forge will identify regions based on the alternation of louder and softer passages in the recording. While the result it far from perfect, it can sometimes be a useful starting point. Keep in mind, however, that defining regions automatically will overwrite any regions you have defined by hand. So this tool should only be used as a FIRST STEP, *not* as a later attempt to supplement your own existing efforts.

Depending on the acoustic characteristics of your recording file, you can experiment with different settings for the parameters that Sound Forge offers, adjusting them to get the best results. The following parameter values may be useful for some files:

Attack sensitivity:	35%
Release sensitivity:	20%
Minimum level:	0.1%
Minimum beat duration:	0.8 seconds
Use release point for end of region:	Yes
Build regions using current tempo:	No

Again, remember that you should *only* use this as an *initial* starting point, lest you erase your own hard-earned work of identifying intonation unit boundaries.

8. Digitizing your recording

You can use Sound Forge to digitize your audio recordings, that is, create a computer file which you can use for listening to and transcribing your recording.

Connect your recording device to sound card of your computer. From the menu, choose **Special/Transport/Record**. Choose the following settings: **44,100 Hz, 16 bit, Stereo**.

9. Burn a CD

You can use Sound Forge to burn an *audio* CD of your recording, which can be played in an ordinary music CD player. From the menu, select **Tools/Burn CD**, and follow the steps.

Of course, you can also use standard CD-burner software to make a *computer* CD of the computer file (e.g. in .WAV format) of your audio recording.

10. Further Information

For additional information on Sound Forge—which can do many more things than this document describes—you may wish to consult the book **Sound Forge 6.0 Power** (a copy is available in the Linguistics Lab). Most of the information in this book applies just as well to Sound Forge 8.0.

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