

Basic Praat Tutorials

This is a set of brief tutorials for how to do some basic things with Praat, the great free phonetics software created and maintained by Paul Boersma and David Weenink. The overall goal is to help you get oriented to the program in general and some of the more commonly used functions. This tutorial is mostly geared toward people that are completely new to the program, but there may be tips that are of some use to experienced users as well. The file is organized into the following sections:

1. Getting and installing Praat (p. 2)
2. Basic interface (p. 3)
3. Opening Sounds (vs. LongSounds) (p. 4)
4. Working with the Object window (p. 5)
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For completeness, this guide was written while I was using Praat version 5.0.27 on a Windows PC (running Vista, specifically). However, the material covered in this guide is very unlikely to change much if at all between versions or platforms.

Feel free to distribute this guide (just don't sell it), but if you do, I'd like to hear about it. I'd also like to hear about anything you find especially helpful or unhelpful, or if there's something else you'd like to see a tutorial for. Just drop me a message at srjacksn@illinois.edu (email address valid until June 2009, maybe longer).

Also, check (and join) the Praat Users list, at:

<http://uk.groups.yahoo.com/group/praat-users/>

Happy Praat-ing!

-Scott

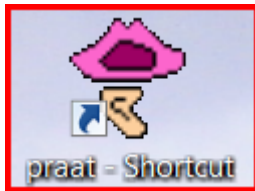
Section 1: Getting and Installing Praat

This is the easiest part!

Just visit <http://www.praat.org/> and follow the instructions.

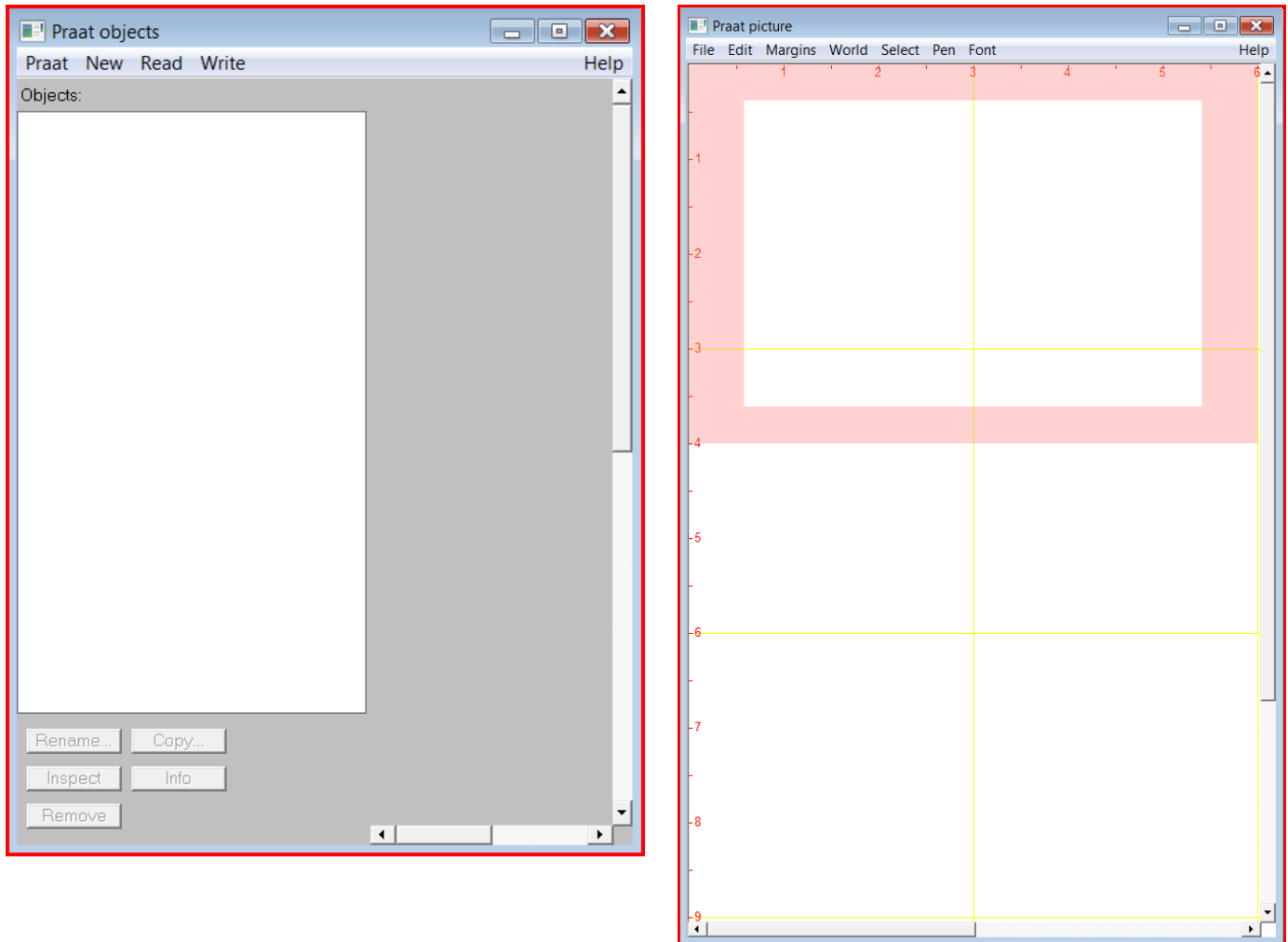
On a Windows machine (at least), the installation is especially “light”, in that it just unpacks as an executable file that you can run from anywhere on your machine. You don’t even need any kind of administrator rights to do this (even on rights-crazy Vista), which is especially convenient if you need to run Praat on a machine that you don’t have those rights for (like a public computer in a lab, library, etc.). It’s even possible to run Praat from an external source like a CD, USB drive, etc.

Personally, I like to put the actual Praat executable in my Programs folder, and make a shortcut to put on my Desktop. Eventually, you will end up with something that looks like this icon to click on in order to start the program:



Section 2: Basic interface

When you start Praat, you will get two windows, the Object window and the Picture window.



The Object window is really where all the action originates, so this guide deals exclusively with it and its spawn. The Picture window is really only used when you want to create pictures to print out or put into other documents. When I am just working with Sounds and so on and don't need to print anything, I will often just close the Picture window to get it out of my way, but this is not necessary, of course.

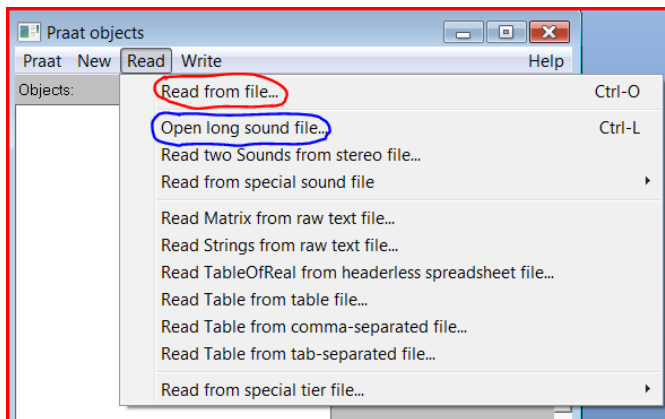
Section 3: Opening Sounds (vs. LongSounds)

One basic thing you will probably do frequently is opening sound files to work with. When you open any kind of file in Praat (except for Scripts, which are covered in Section 8), they are represented as **Objects** in the Objects window. As you will discover, there are many kinds of Objects that Praat deals with.

The two basic types of sound file Objects are Sounds and LongSounds. One common confusion for new users is the misconception that Sounds and LongSounds are different kinds of files. They are not different kinds of **files**, they are different kinds of Praat Objects. Sounds and LongSounds are really just different ways to open up any given sound file; you can open the exact same sound file as either a Sound or a LongSound. The difference between Sounds and LongSounds is how Praat deals with them and what you can do with them. The rule of thumb is that you can do more with and to Sound Objects, but because of this, they take more memory, and so opening very large sound files as Sounds is usually not advisable. How big of a file you can get away with opening as a Sound will generally depend on your machine and how much memory it has. Usually you are safe opening files that are a few minutes or less as Sounds, and if you have a very good machine, you can get bigger ones in.

You can open a variety of file types, including WAV, AIFF, AIFC, and MP3. As of this writing, Praat cannot open M4P files (like what iTunes uses, for example), but this may change with future versions (MP3 files were added in June of 2007).

To open a file as a Sound, you select Read → Read from file... and follow your basic file opening procedure. To open a file as a LongSound, just select Read → Open long sound file...



This will open the sound in the Objects window, which is the topic of the next section.

Go ahead and try opening both a Sound and a LongSound to work with in the following sections. (**Tip:** you can even just open the same sound file twice, as both types of Objects, in case you only have one sound file on hand.)

If you want a sound to play with, you can get “rain_in_spain.wav” from my webpage at:

http://www.psych.uiuc.edu/~srjacksn/rain_in_spain.wav

Section 4: Working with the Objects window

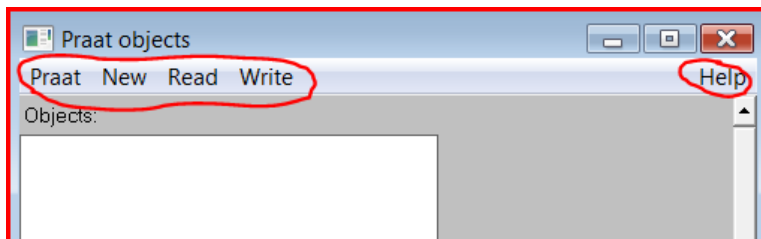
The Objects window is the center of the action in Praat. It has basically four areas of interest:

- The menus (at the top)
- The Objects list (on the left)
- The context-sensitive command buttons, or Dynamic Menu (on the right)
- The fixed object-handling buttons (on the bottom)

I'll go over each of these in turn. If you want to follow along with the tutorial, you should try opening both a Sound and a LongSound to work with. See Section 3 for how to do this.

Object window menus

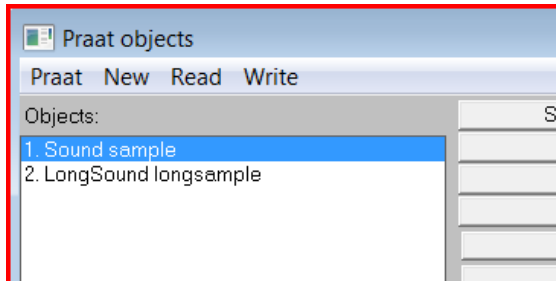
These are pretty self-explanatory and work basically like you'd expect, if you're used to programs with menus. The menus are: **Praat**, **New**, **Read**, **Write**, and **Help**.



These menus pretty deal with what they say they do, and I'll direct you to the appropriate menu elsewhere in this tutorial, so I won't go through any more details about them here. I just wanted to point them out, and let you know that when I say **Object window menus**, these are what I'm referring to.

Objects list

This is the box to the left that is your basic "working area." Praat works with and manipulates Objects of various kinds, and if you want to work with some kind of file in Praat, the first thing you need to do is to get it into the Objects list. So if I follow the instructions in Section 3 and open up a sound file called *sample.wav* as a Sound and *longsample.wav* as a LongSound, this is what will show up in the list:



Objects are displayed first with the **type** of Object they are, followed by the **name** of that Object. So the first Object is a **Sound** Object called “sample”, and the second is a **LongSound** Object called “longsample”, because “sample” and “longsample” are the file names of the sound files I opened (see Section 3 for the difference between a Sound and a LongSound).

Praat does not complain if you name a bunch of Objects exactly the same name. It also keeps track of the Objects separately (i.e., changes to one Object do not affect another, even if they have the same name). This can be useful and convenient at times, but it also can be confusing if you lose track of which ones are which, so user beware.

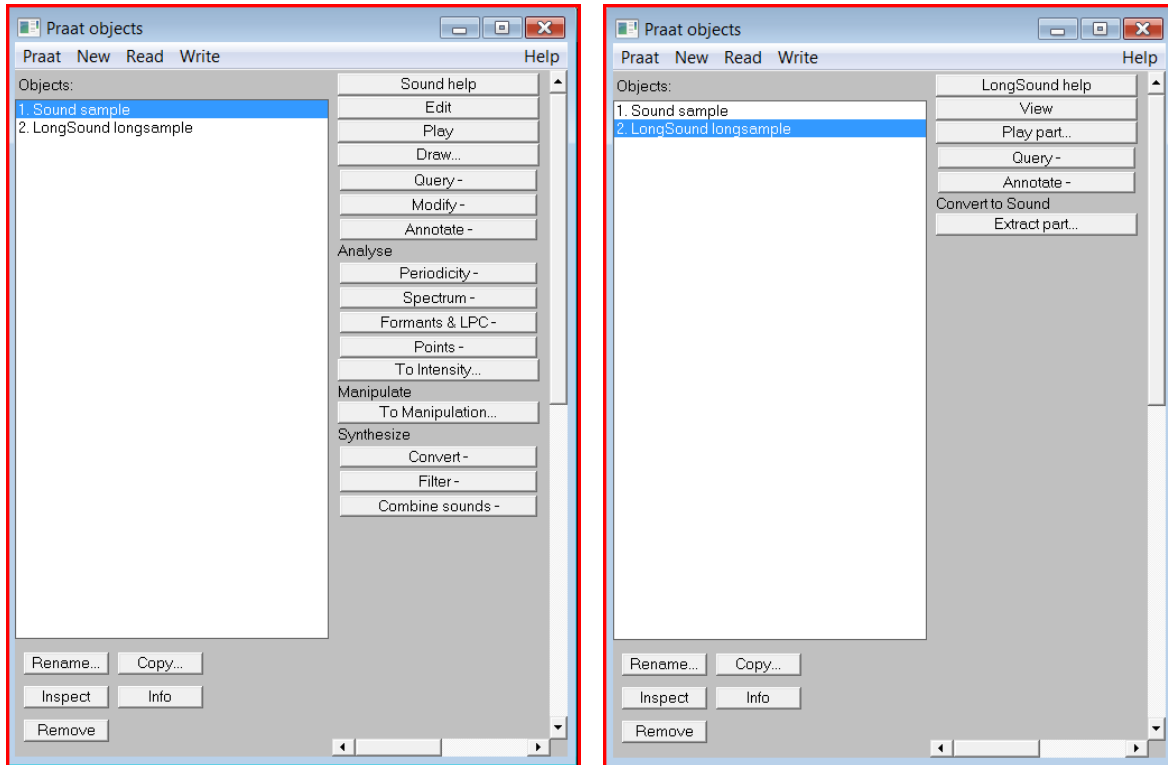
Selection

The first step to working with an Object is to **select** it. The picture above shows the first sound being selected. You can select any subset of objects by clicking, click-dragging to select a lot of objects, Shift-clicking to select the endpoints of a continuous set of objects, or Ctrl-clicking¹ to add individual (and potentially non-adjacent) objects to the set of selected objects. There is no way to re-order Objects in the list, without closing and opening them again, so it is likely that you will eventually want to select a few non-adjacent Objects at the same time, using Ctrl-click. Other common shortcuts – like Ctrl-A to “select all” – typically do not work.

Context-sensitive action buttons

These are also known as the “Dynamic Menu” in the Praat Help manuals. Probably the first thing you notice when you click on different Objects is that the buttons that show up on the right-hand side change. For example, here are the displays I get when selecting a Sound and a LongSound respectively:

¹ Ctrl-clicking is a PC/Windows function. This may be known as “Open Apple”-clicking or “context”-clicking for Mac or other operating systems.

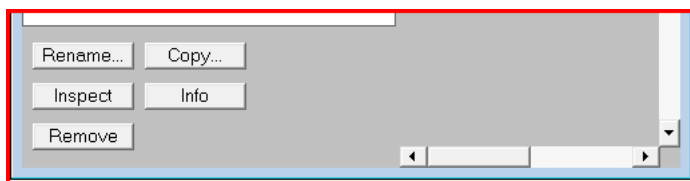


As you can see, this is what I was referring to in Section 3 about being able to do more with Sounds than with LongSounds, because you have a lot more action buttons available on the right side of the Objects window for a Sound (the picture above on the left) than with a LongSound (the picture above on the right).

The various action buttons represent (virtually) all the commands and operations that you can do with a given Object. As you can see, there are lots of these, and since this is a Basic Tutorial, we will not be going over all of them. The goal here is just to point these out to you, and let you know that when I talk about **Action buttons** or the **Dynamic Menu**, these are what I'm talking about.

Fixed object-handling buttons

The last general region of the Objects window is a set of buttons at the bottom of the window that do not change, which deal with general things you can do to any Object in the Objects list.



I won't go over all the information that you can get with the Inspect or Info buttons (but you are welcome to check them out), but I will tell you about the others, because they have more general utility.

Rename...

The Rename... button does exactly that. It opens a new little window (the presence of ellipsis dots on a button always indicates that it will open a new dialogue box) that lets you change the name of the selected Object. **Important tip:** it's critical to understand that this does NOT rename the actual file, if the Object represents a file of some kind. This only renames the Object, which is in the working space of Praat. In order to permanently change the name of the file as well, you will need to save it with the Write menu (see Section 5 for more details on that).

Therefore, Rename... is mainly useful to help you keep things straight in the working space of the Objects list, so you can (for example) keep track of all the different modified versions of a file that you've created in a session.

Copy...

This button also does what you'd expect. It makes an exact copy of the selected Object (not plural Objects— you can only Copy one Object at a time this way) and sticks it on the end of the list. It opens a window to allow you to rename the new copy right away, to help you avoid confusion with identical names, but you never have to change the name of the copy, because Praat doesn't mind Objects with identical names. Also note, this does not copy the underlying **file** that an Object may represent; it only copies an Object in the temporary working space of the Objects window.

Remove

Finally, the Remove button helps you keep your working space clear by removing objects from the Objects list. This is something you can do to as many Objects at a time as are selected. **WARNING:** if you Remove an Object, it's gone. There is no recovering an Object, and there is no "undo" button to take back a Removal. If you want to have access to an Object again, you **MUST** save your Object using the Write menu in order to save it to a file that you can reopen later (see Section 5). Praat WILL NOT give you any kind of "are you sure you don't want to save?" warning when you hit the Remove button, so be sure you have saved any changes you want before clicking Remove.

When closing the entire Praat program (by closing the Objects window), Praat will ask you if you're sure you want to quit if you still have Objects in your list. But if you click Remove, Praat assumes you know what you're doing, and will not hesitate to close an Object that you haven't saved yet.

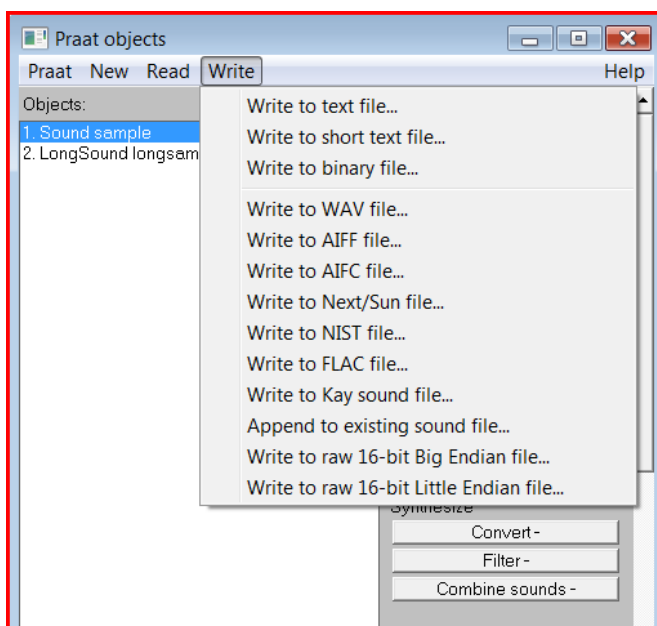
Section 5: Saving files

If you've read the last part of Section 4, you will know that it is easy to close an Object without saving it, thus potentially losing your work. If you want to save an object as a permanent file on your computer that you can later access after closing Praat, you will need to use the Write menu.

Important: dealing with Objects in Praat will make more sense once you start thinking about them as temporary “working copies” of files that you may have opened or created. These working copies will disappear the instant Praat closes, and they cannot be accessed by any other program on your machine. If you want an Object to be accessible after Praat closes, and/or if you want another program to be able to access an Object, then you must use the Write menu to save it. This is true even for files already on your computer. The Object that represents any changes to a file that you already have will be lost unless you Write the new Object to a file.

Fortunately, saving Objects in Praat is very simple. All you need to know is what kind of file you are trying to save. If you are working with sound files (i.e., Sound or LongSound objects), you will almost always want to save it as a WAV file, because that is a very common sound file format that can be opened by most other programs. Many other files in Praat are best saved as text files. If you are trying to save an Object with a weird type and you're unsure about the format, the safest thing to do is to try to save it under one format, and then try to Read that new file you've written before closing out Praat or Removing the original Object. If you can get the new file back into Praat in the form you want, then you've succeeded. If you can't, then you should try Writing it as a different format, until you find one that works.

Once you know what kind of format you want, all you need to do is select the Object you want to save, and choose the appropriate command from the Write menu:



Often, your options will change, depending on what kind of file you have selected. For example, if you are trying to Write a file from a text-based Object, you will usually not have the option to Write to WAV file.

Another important tip is that if you change the file **name** of the file you are Writing in the save-to-file dialogue window, Praat will NOT append the appropriate extension. Praat only appends the extension if you leave the file name the same as it is in the Objects window. So either use Rename before Writing to disk, or remember to add the extension (e.g., “.wav” for a WAV file) in the save to file window.

Finally, you will usually want to avoid Writing multiple Objects at once, because if you select more than one Object and select Write, you will end up Writing a single file, with the Objects appended. For example, if I select both the Sound and LongSound that I have in my current Objects list and select Write → Write to WAV file..., I will NOT end up saving both files. I will end up with one sound file that is simply both sound files appended together. Therefore, you will usually need to Write each file that you want saved separately.

Section 6: Basic Sound editing

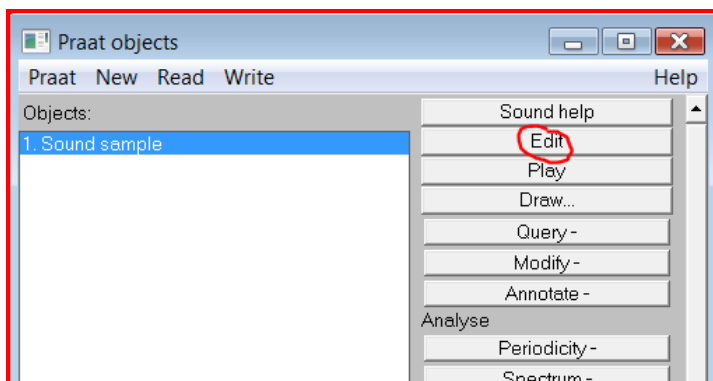
Most people using Praat will want to visualize and/or modify sound files in some way. One of the easiest and most interactive ways to do this is to use the SoundEditor. In this section, I will go over the following topics:

- Opening a SoundEditor window
- Navigating the SoundEditor
- Changing what information the SoundEditor displays
- Zoom tools
- Selecting and playing sounds and excerpts
- Taking measurements
- Cutting and pasting
- Saving

Note that this section is aimed specifically at the Editor you get with a Sound object. The Editor for LongSound Objects is slightly different. It has many of the same properties, and the basic navigation is similar, but many of the options for displaying and modifying the sound are different. This section will not cover the LongSoundEditor, but many of the tips here will be applicable.

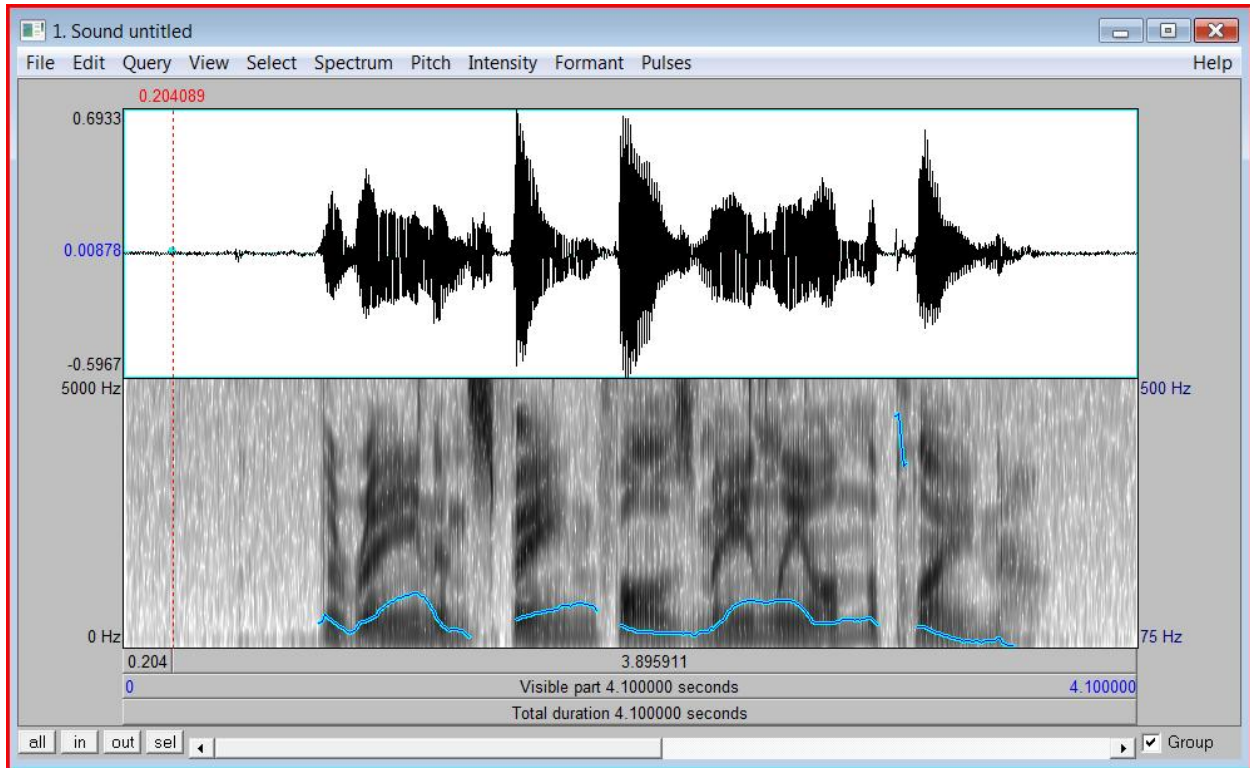
Opening a SoundEditor window

This is very simple. Just select the Sound you want to Edit (you can only open one at a time), and click the Edit button in the Dynamic Menu:



Navigating the SoundEditor

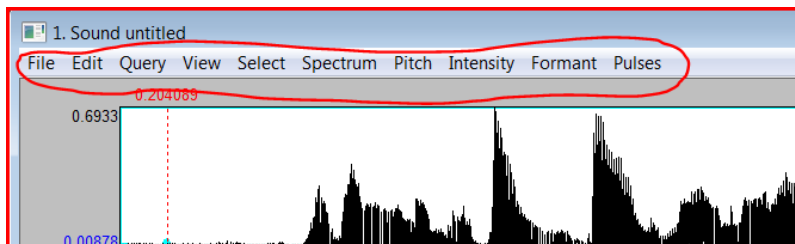
Here is what a typical Editor window may look like:



Your display may look slightly different, depending on what your default display preferences are, and obviously depending on what sound you are editing. The picture above shows the Spectrogram and Pitch options turned on (with default settings), and everything else turned off.

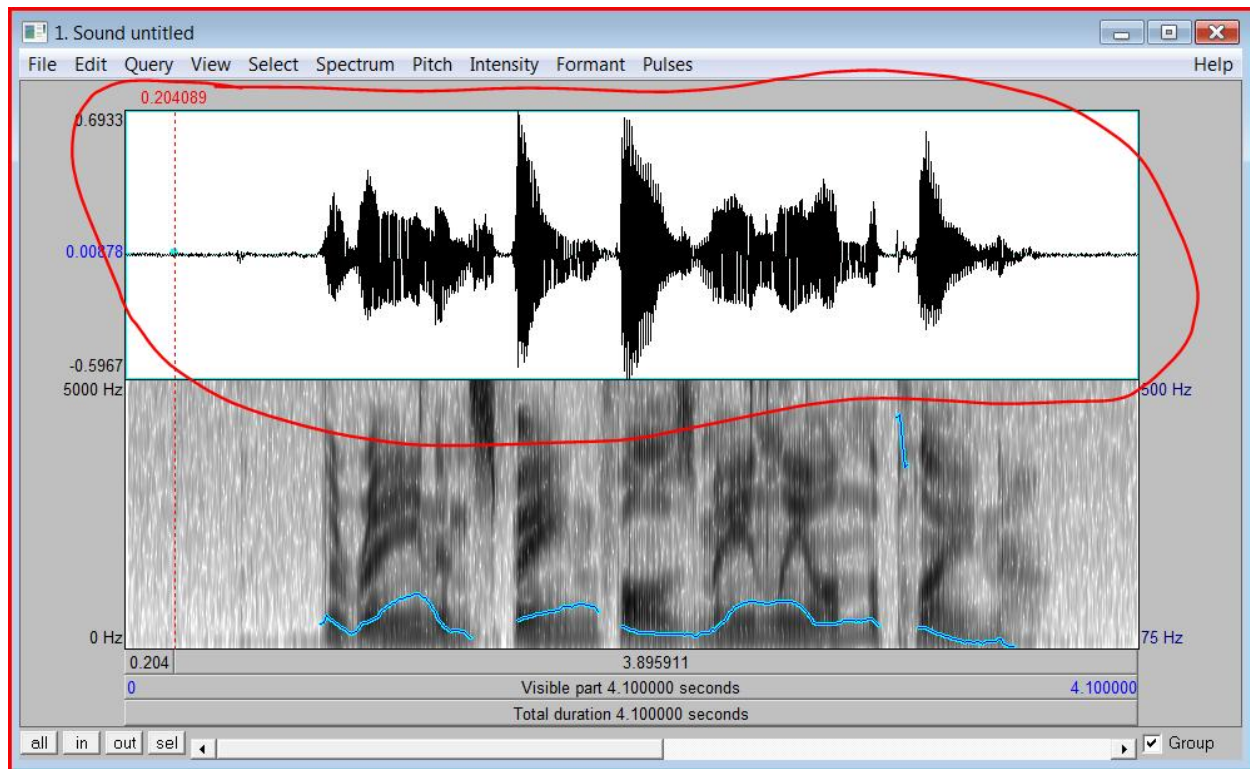
My purpose here is not to take you through all the details, but I will point out the major components of the window. In the later parts of this section, I will refer back to some of these features in order to get the most basic functions to work.

Menus



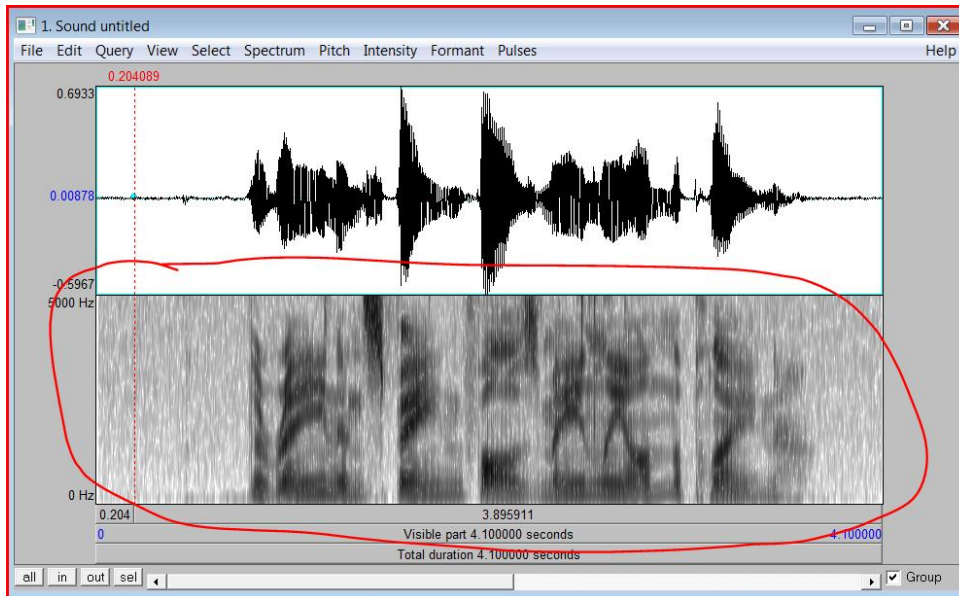
The menus are where most of your options reside for viewing and analyzing the signal. Some of these functions can be called using the Action buttons in the Objects window as well, but some of them cannot, and often it's easier or more convenient to use these menus inside the Editor.

Waveform window



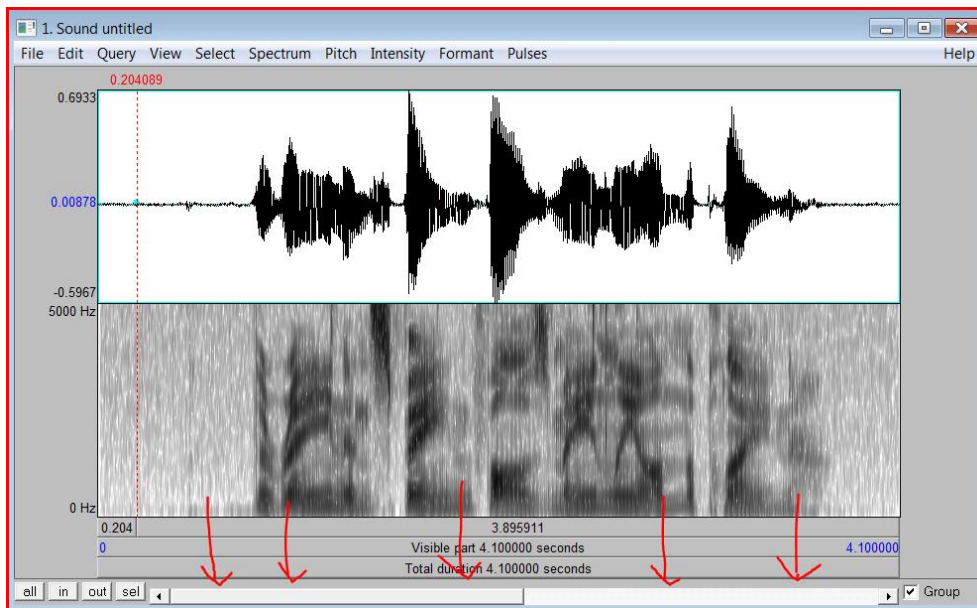
This window is always present in the Editor, and it displays the raw waveform (i.e., pressure wave) of the sound. The horizontal dimension is time (from left to right), and the vertical dimension is air pressure in Pascals (estimated, of course, given the input from microphone, pre-amp, etc.). If “Show Pulses” under the Pulses menu is turned on, this window will also show a lot of vertical blue bars, marking where Praat is estimating the primary glottal pulses to be (or other fundamental wave if the sound is not speech). I rarely have a use for these, so I routinely turn off Pulses in the menu, to cut down on the visual clutter.

Analysis window



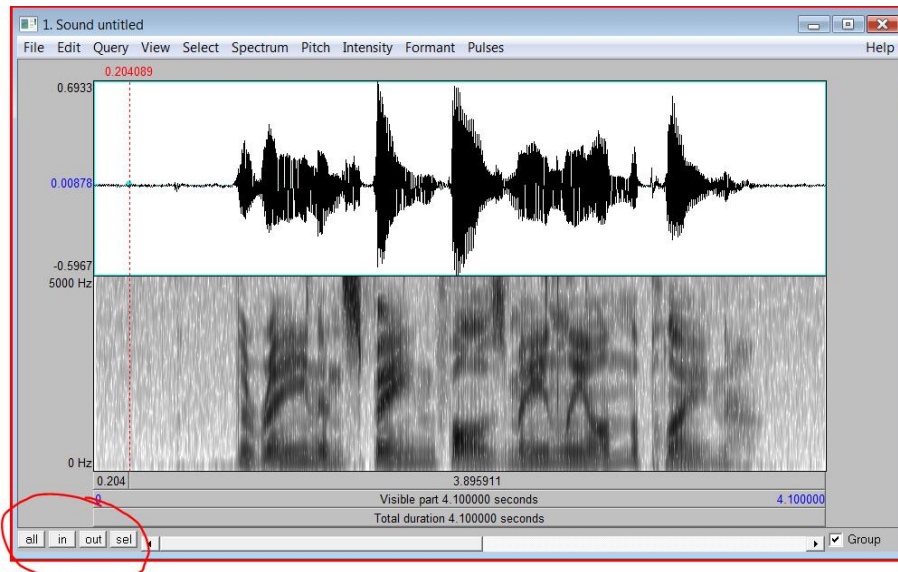
This window displays other information, parallel to the waveform. The horizontal dimension is also time, lined up precisely with the waveform time dimension. The vertical dimension depends on what information is displayed here. In this example, only a spectrogram is displayed. If all the analysis features are turned off, this window will disappear, allowing the waveform window to expand to fill the entire space.

Scroll bar



The scroll bar is your main means to change the view forwards or backwards in time, assuming your display is not already showing the entire sound. Using the scroll bar is covered later in this section.

Zoom tools



These buttons are the primary ways to zoom in or out for different views of the sound. Their use is covered later in this section.

Changing what the SoundEditor displays

The SoundEditor can display a range of interesting and potentially useful information. The main way of changing what is displayed is by activating the options under the second half of the 10 menus, namely **Spectrum**, **Pitch**, **Intensity**, **Formant**, and **Pulses**. These each have a Show... option that can be turned on and off. Briefly, these are:

- Spectrogram (under spectrum): if you don't know what a spectrogram is or what it is used for, you should refer to a phonetics text (like Peter Ladefoged's classic *A Course in Phonetics*), or check out my own tutorial on reading spectrograms in Praat (also available on my website). In brief, it is a graph with time on the horizontal axis, frequency on the vertical axis, and intensity represented as darkness. There are different ways of generating spectrograms, and Praat allows for many options, accessible under the Spectrum menu. Once you learn how to read spectrograms (see another one of my tutorials for some beginning tips), they are usually the best way to help you segment

speech, if you need to segment utterances at the word level or smaller. Therefore, I usually have this setting turned on.

- **Pitch track (under pitch):** this is an estimated interpolation of fundamental frequency (see the Praat Help manual for more on how Praat computes this). Note that because the method for computing this requires a window of analysis, and this value in the Editor depends on the visible portion of the Sound, changing the view (for example, zooming in to a very small time window) can affect the pitch value estimated at any given time point. My own primary research deals with pitch contours, so I usually have this option turned on in addition to the spectrogram.
- **Intensity curve (under Intensity):** this is a representation of the decibel (dB) level throughout the sound. Of course, the actual loudness of the sound depends on how loud your speakers/headphones are, and perceptual loudness is not purely a function of dB (also of pitch and other factors; refer to a psychophysics text for more information).
- **Formants (under Formant):** these are a bunch of red dots that represent the estimated locations of speech formants at regular intervals (the exact settings can be modified quite a bit). Again, if you'd like to learn more about formants, consult a phonetics text, but briefly, they represent the peaks of energy in the higher harmonics of a sound. These energy peaks vary depending on the shape of the resonating tube (i.e., the shape of the vocal tract), therefore they are acoustic reflections of the changes you make in your vocal tract when making different speech sounds. In my humble opinion, Praat's formant analysis adds more clutter than help when trying to locate formants (since formants are often visible as dark bands in the spectrogram), so I usually turn this part of the analysis off.
- **Pulses (under Pulses):** as mentioned above, Pulses are shown as vertical blue bars, marking where Praat estimates the primary glottal pulses to be. I usually turn off this setting, too.

Scroll bar and zoom tools

These are the basic tools for changing what part of the sound you are looking at. The scroll bar works exactly as you would expect a scroll bar to work. You can drag the box, click to move the box, click on the arrows to shift the view slightly, etc.

The zoom tools are also fairly intuitive, and extremely useful and easy to use.

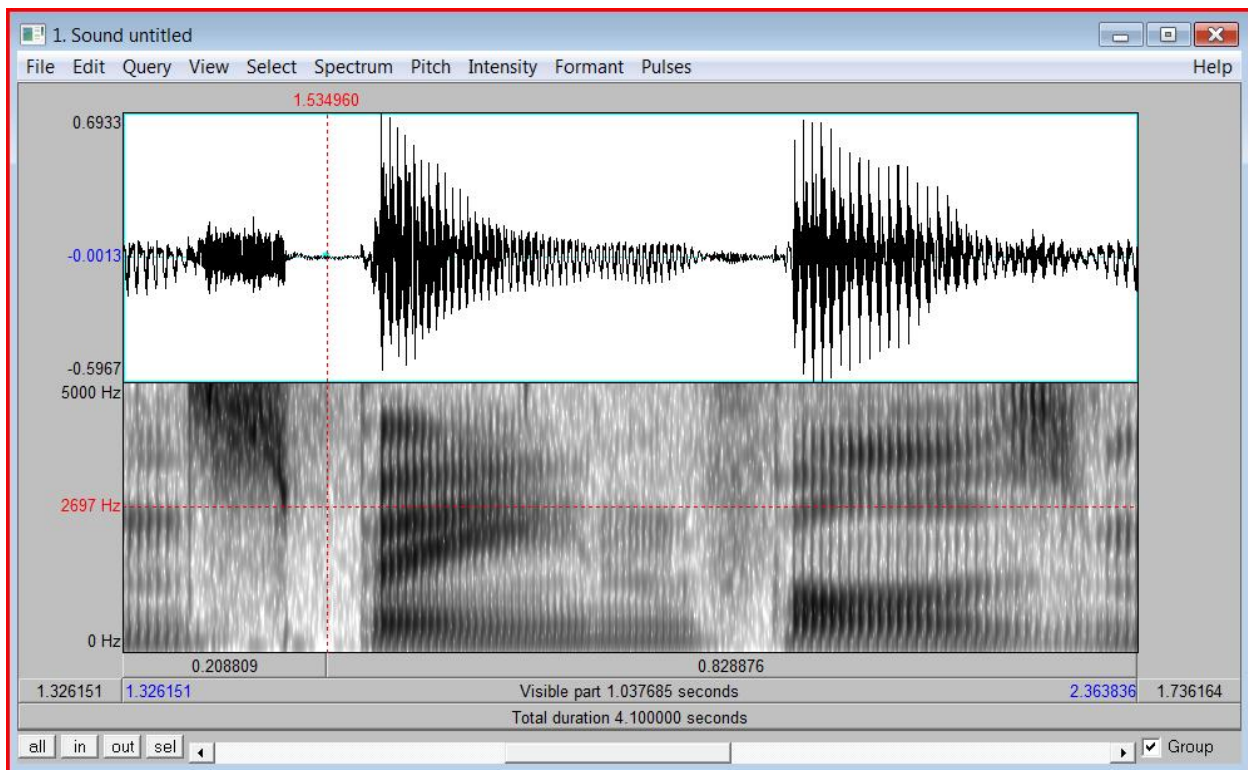
- **all:** zooms out to display the entire sound in the window.
- **in:** zooms the view in, but the zoom is always centered on the currently displayed window. It does not zoom in centered on, say, the current selection.
- **out:** the opposite of in, also keeping centered on whatever the current view is, not the current selection.

- **sel:** perhaps the most useful zoom button, this button zooms the view to precisely whatever the current selected area is. This is by far the easiest and quickest way to zoom into a particular desired area.

Selecting and playing sounds and excerpts

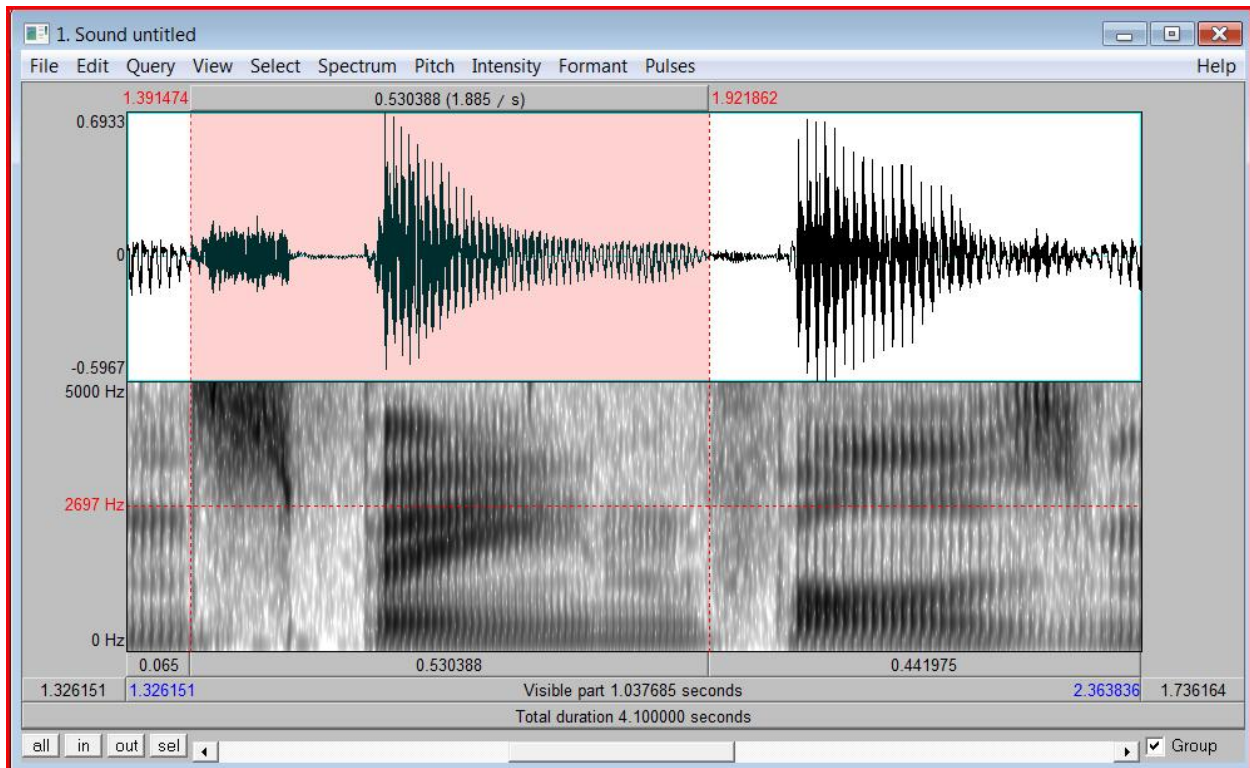
Selecting sound segments is fairly straightforward as well. If you click on either the Waveform window or the Analysis window within the Editor, you will see a dotted line cursor. This is a vertical line that goes through both Waveform and Analysis windows, as well as a horizontal dotted line in the Analysis window.

At the top of the cursor, Praat gives you the time position of the cursor (in red). In the example below, you can see that the cursor is at time 1.534960 in the sound. At the bottom, you will see that there are three layers of time bars. The bottom layer indicates the total duration of the sound file. In the example below, it shows a total duration of 4.1 seconds. The next layer up indicates the duration of the current view being displayed, in this case, 1.037685 seconds. In addition, this layer also displays the beginning and ending times of the current window in blue (here, 1.326151 and 2.363836 seconds, respectively), as well as the durations of the remaining segments on either side of the current view (here, 1.326151 and 1.736164 seconds). Finally, the top layer, just under the Analysis window, shows the durations for the segments bisected by the cursor (here, 0.208809 and 0.828876 seconds, respectively).



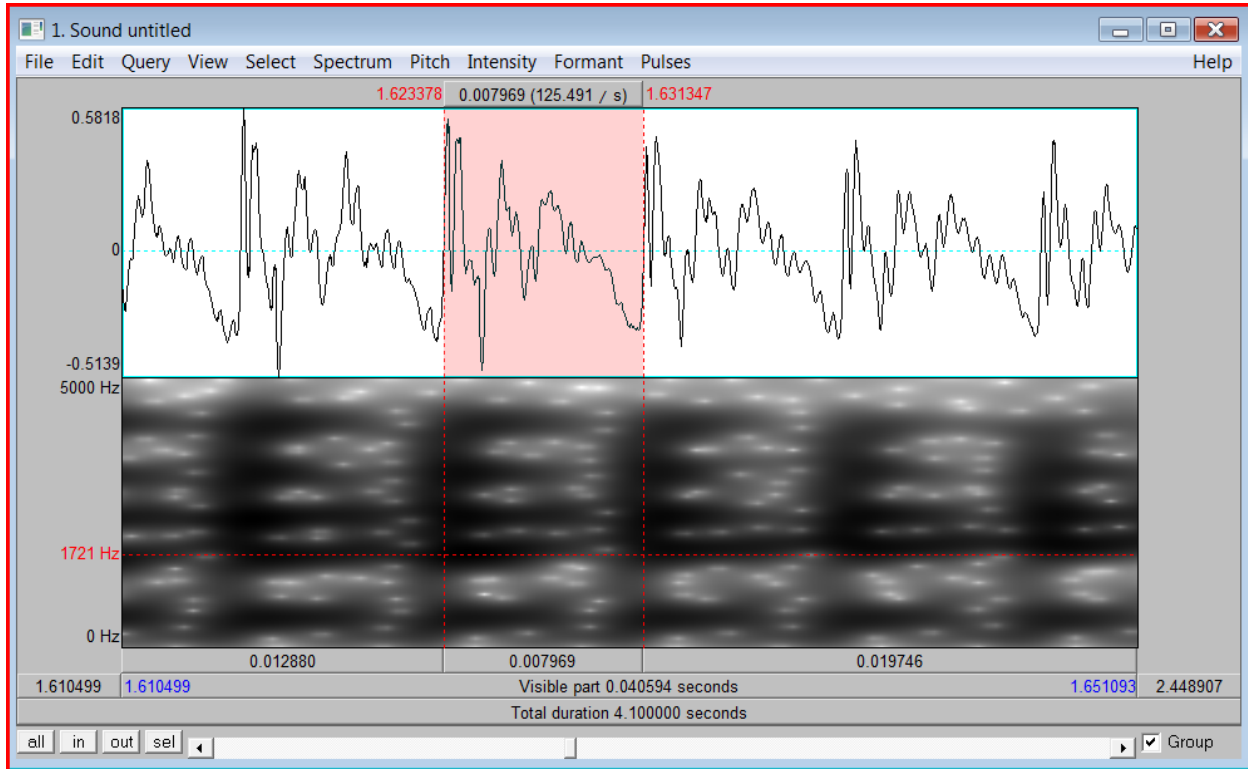
The horizontal line on the cursor gives further information, depending on what is being displayed in the analysis window. In the example above, it is indicating that the horizontal cursor is positioned at 2697 Hertz (Hz) in the spectrogram.

You can also select a chunk of time, simply by clicking and dragging. This is shown below:



You get the same kind of information on the bottom time bars, with the only change being that because I have selected a segment of sound, the bar just under the Analysis window gives the durations of all three segments (preceding visible segment, selected segment, and following visible segment, which here are 0.065 sec, 0.530388 sec, and 0.441975 sec, respectively).

The selected segment duration is also displayed at the top, which is a quick way to check durations of words, segments, etc. In addition, the top bar also displays the inverse of the duration as “N / s” (N per second). This can be useful to “manually” check pitch. Just zoom in close enough so that you can see the individual waveform periods, select one, and you get the cycles per second, otherwise known as Hz. For example:



I have zoomed in quite a bit here, so that I can see individual glottal cycles, and I have selected one cycle. The top bar tells me that this is 7.969 milliseconds long, which is a rate of 125.491 per second, a.k.a. 125 Hz.

Precision selection

If you need to be more precise with your selection or cursor position than you can manage with your mouse, there is an entire **Select** menu devoted to making your life easier (or at least more precise). These are pretty self-explanatory, and allow you to specify exact selection positions, shift the cursor by an exact amount, expand/reduce/shift a selection by an exact amount, etc.

Getting information

Once you have your cursor positioned where you want it (either at a point or covering a selection), you can get all kinds of information about the sound at that position. In the current version (5.0.32), this is accomplished by finding what you want in the appropriate menu. For example, if you want to know the pitch at a given point, or the average pitch over a selection, look under the Pitch menu.

Cutting and pasting

One common and simple way to modify a sound is cutting and pasting segments. Maybe you want to cut “dead” space in the beginning of a recording, or splice a segment out/in (e.g., substituting a segment for a cough in a phoneme restoration experiment). The various cutting and pasting options are available under the **Edit** menu, but the typical cutting & pasting keyboard shortcuts work as well (e.g., Ctrl-X to cut, Ctrl-C to copy, Ctrl-V to paste in Windows). Note that cutting and pasting change not only the overall duration, but also the time labels. For example, if a consonant burst starts at 1.2 seconds and you cut 0.5 seconds out of the beginning of the sound, the burst will now be positioned at time 0.7 seconds.

In case you are interested in cutting and/or splicing in the middle of sounds, I would like to also point out that there are “move cursor/selection to nearest zero crossing” functions in the **Select** menu that are extremely helpful for making good-sounding splices (i.e., if you don’t splice at zero crossings, you are likely to end up with an annoying “click” in the resulting sound).

Saving

Finally, I want to point out that you are able to Write to disk directly from the SoundEditor window, via the File menu. Specifically, you are able to Write any selection you make to disk. You can also send selections to the Objects list as a new Sound Object, if you want to work with that selection before saving it to disk. When you send a selection to the list, you have the option to “preserve times”, which means the time values are kept from the original sound, as opposed to starting the selection at zero.

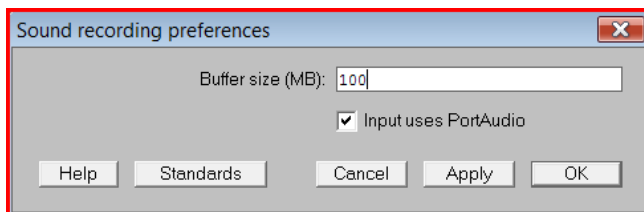
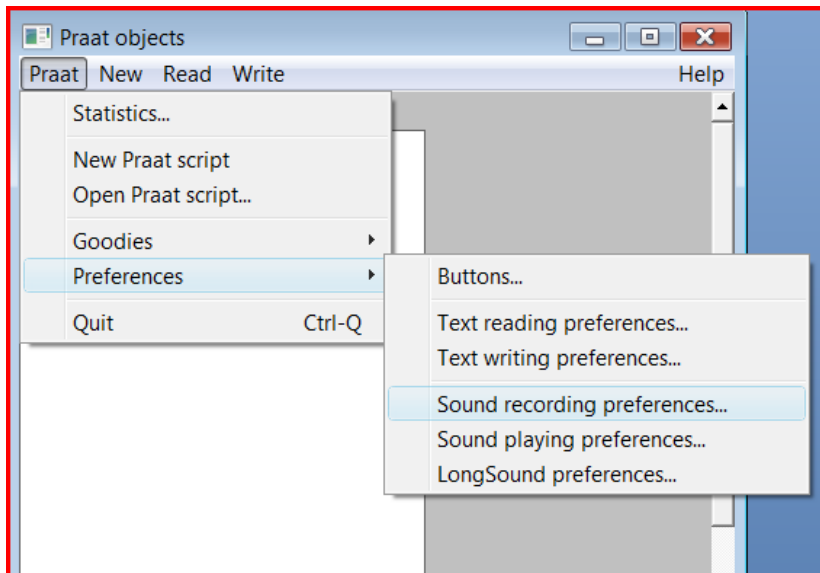
This completes this introduction to the SoundEditor, but it should be clear that I have just scratched the surface. Check my page from time to time for new tutorials on more specific topics and uses for the Editor.

Section 7: Basic recording

This section covers some basic issues in using Praat to record sounds. I will not go over all the other practical issues of recording (microphone positioning, etc.), but simply assume that you have a microphone connected to your computer and are ready to record.

The first step is to make sure your recording buffer is big enough for the length of recording you are making. You should only have to do this once, until you install a new version of Praat. I suggest making the buffer at least 100 MB, which should allow 30+ minutes of recording at 22050 Hz. If you want to be able to record for longer, or at a higher sampling rate, make the buffer larger. As far as I can tell, the only reason to worry about the buffer getting too big is if you have a machine with not much memory and are worried about the machine crashing while making your 3-hour-long recording. However, if your recording exceeds your buffer size, Praat will just stop recording when it reaches the end of the buffer, and won't warn you about it, so be sure that you know the limits of your buffer before recording that critical data!

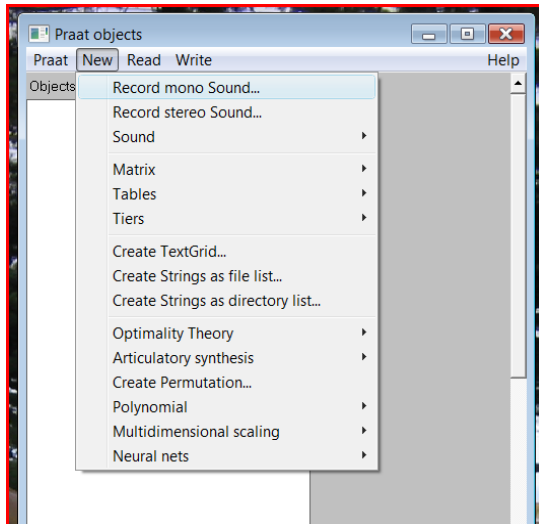
To set the buffer, select Praat → Preferences... → Sound recording preferences...



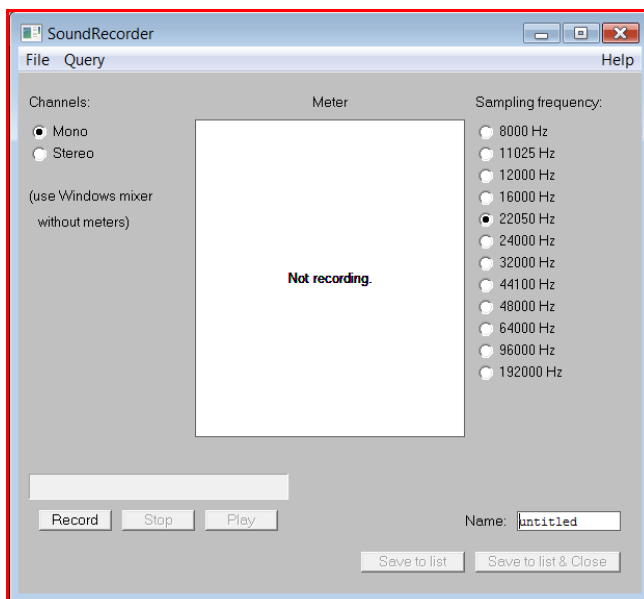
Then enter 100 (or whatever number you decide) in the window, and click OK. This preference should stay set this way until you install a new version of Praat, so you should only have to do this once.

When you are ready to record:

In the Praat Objects window, select New → Record mono Sound...

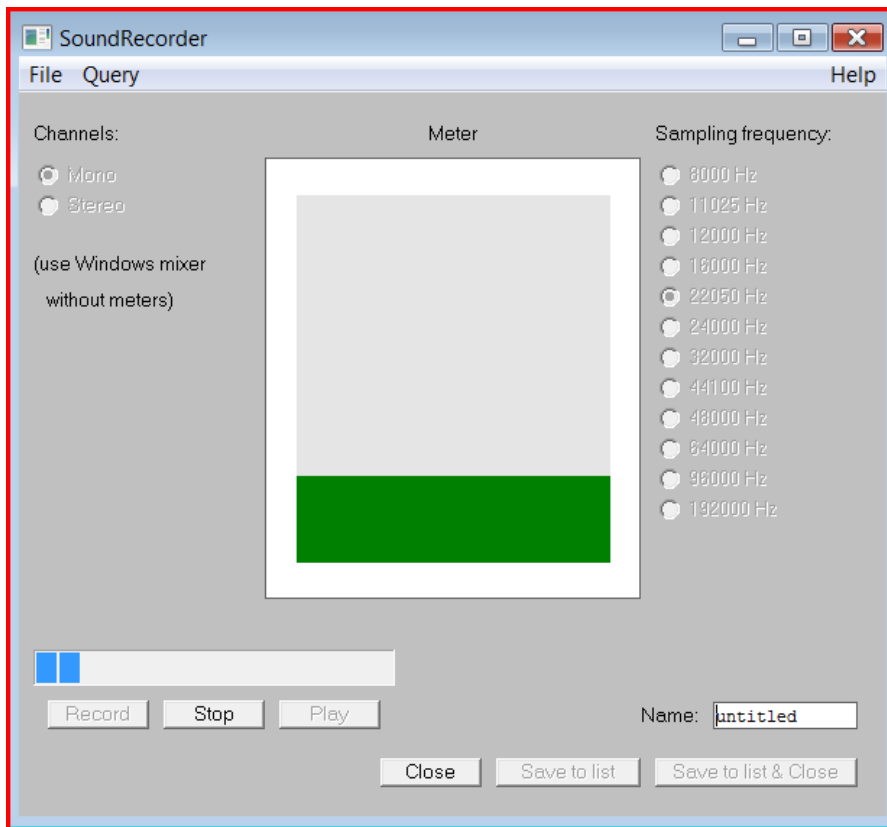


This opens the SoundRecorder window.



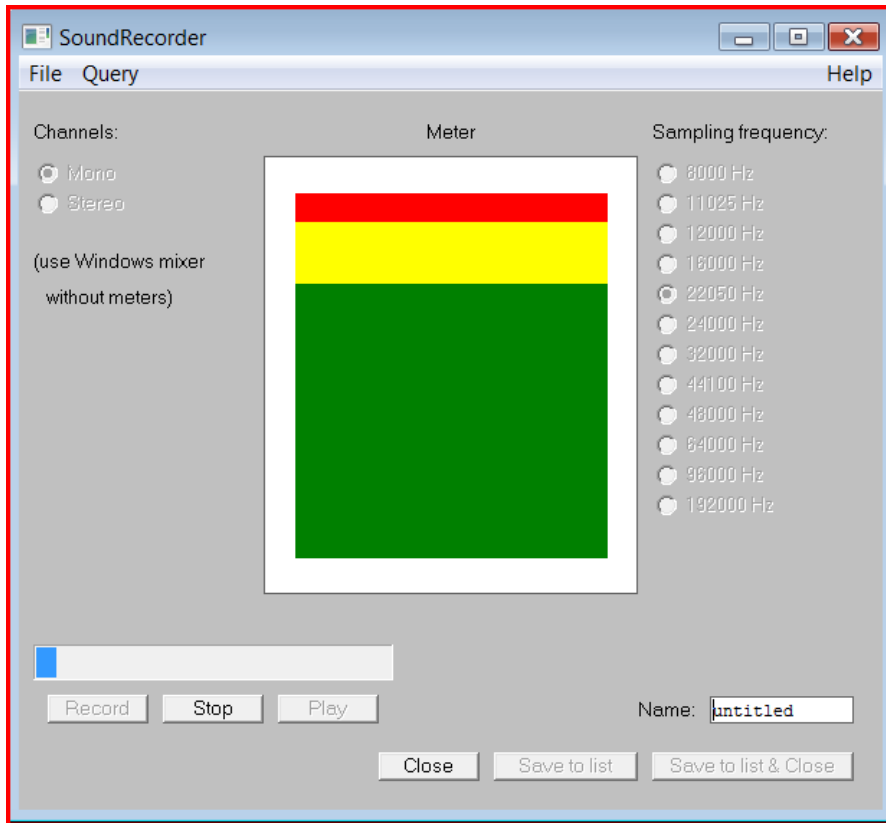
Select a sampling frequency with the radio buttons on the right (44100 Hz is CD-quality sound, but 22050 Hz is usually good enough for speech analysis/playback purposes, and will help keep file size down).

When ready to record, press the Record button. Sound input should make the green bar in the middle of the window jump up and down.



If you don't see the green bar moving, then something is wrong with your sound input. You may need to check your microphone, connection to the computer, audio drivers, volume settings, etc. in order to fix the problem. Generally though, if your computer is correctly set up to take sound input, Praat will get it (caveat: on some machines, you may have to reboot before Praat recognizes an external mic that you just plugged in).

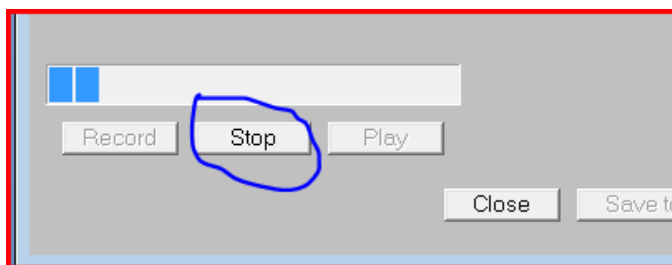
If you are getting sound input, avoid the bar getting too high (into the red):



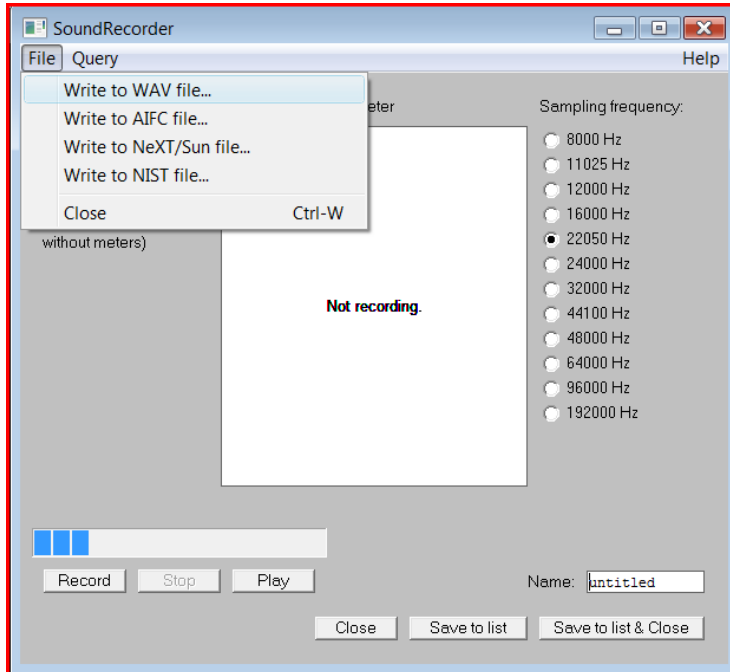
If the sound input is too high, amplitude clipping will result, which makes the recording sound crackly. Getting into the yellow is not a problem, generally.

As the recording goes on, the blue progress bar above the Record, Stop, and Play buttons will fill up.

When you're done recording, press the Stop button.



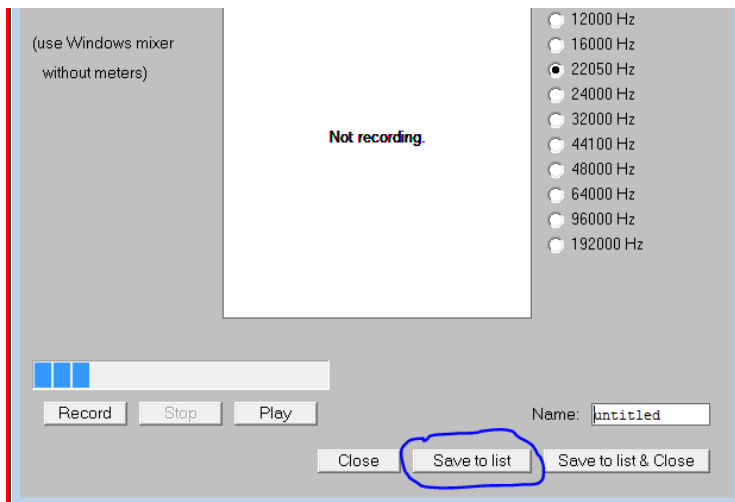
At this point, your recording is just sitting in the Praat recording buffer, so you should save it immediately! Starting a new recording will clear this buffer, meaning you will lose any unsaved recordings. To save from the SoundRecorder window, select File → Write to WAV file... :



In the file saving window, you should name the sound what you want, and then append .wav (or another appropriate) to the end of the file name, to ensure that it will be readable as a WAV file (or other file) later. In other words, Praat does not usually append the extension when you change the file name in the file saving window, so you have to do it yourself.

If this is an especially important recording, I would suggest trying to Read the file as a Sound (or LongSound if it's more than a couple of minutes!) before closing the SoundRecorder.

Alternatively, if the recording is short and you want to work with it right away without saving it yet, you can hit the “Save to list” button:



This will move the new recording into the Objects list as a Sound, with the name shown in the “Name:” box (which defaults to “untitled”). **Important:** only use “Save to list” for short recordings, because it always makes it a Sound object, and if you try to make a very long recording into a Sound object, you may crash Praat and lose the recording! Finally, when using the “Save to list” button, just remember that the recording is not saved permanently to disk until you Write it (see Section 5).

Section 8: Opening and running Scripts

The final section of this basic tutorial deal with running Scripts, which are an immensely useful and powerful tool for getting the most out of Praat. The Praat Help manual has a very good introductory tutorial for learning how to create your own scripts, and expanding on that is beyond the scope of this introduction. My purpose here is just to orient you towards how to use scripts that other people have used. This section covers these topics:

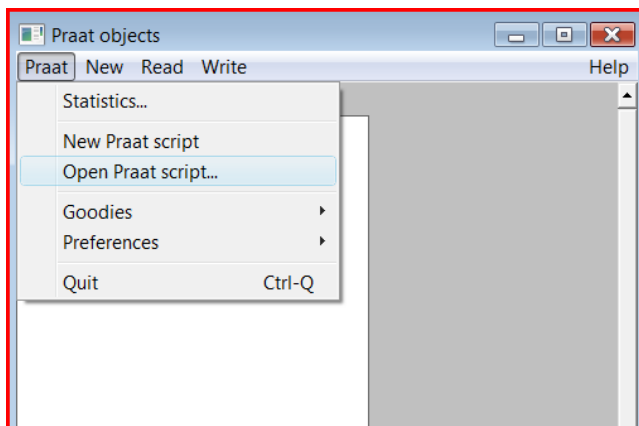
- What is a Script?
- How to open Scripts
- How to run Scripts

What is a Script?

A Praat script is simply a set of commands and functions that someone has packaged into something that can be run all at once. It is an extremely useful way to automate simple, repetitive tasks in Praat. It is written in a programming-like language, but this language is very simple and easy to learn. However, you do not need to know anything about the scripting language to effectively run a Script.

How to open Scripts

This is worth mentioning simply because opening Scripts is different from opening any other file in Praat. Instead of using the **Read** menu, you use the **Praat** menu in the Objects window, then select “Open Praat script”:

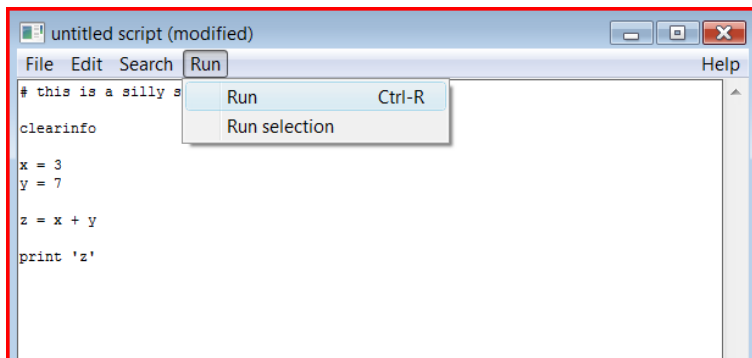


Then you select the file to be opened as usual, and the script will open in a new window.

Sometimes script writers will put comments at the top of their script in order to explain how to use it or how it works. This can be very helpful if you are trying to run a script that you found elsewhere, like on someone’s website. If you so desire, you can edit the script in this new window, but you should not need to in order to run it.

How to run Scripts

Once the Script is open, this is very easy! Simply select Run → Run, or hit Ctrl-R:



The script will then run, and do whatever it's written to do. This may open up additional dialogue windows, create new sounds, produce analyses, etc. etc.

When you are done using the Script, you can simply close the window, or it will close by itself when you quit Praat.

This concludes this set of Basic Praat Tutorials. I hope this has been helpful and/or clear. Good luck!

If you want to try out some things that I have talked about here, I have included a set of Exercises along with the answers in the following Appendices.

Appendix A: Practice Exercises

Exercise 1: Opening, changing, and saving a sound

Open a sound file that you don't care about messing up (just in case something goes horribly wrong ☺).

Open the file both as a Sound and a LongSound.

As a Sound, make it go in reverse by selecting the Sound, clicking the "Modify" button in the Dynamic Menu, and selecting Reverse. Play the Sound to confirm that the reversal worked.

Use the Rename... button to rename this Sound to "backwards_[original sound name]"

Write this Sound to WAV file (or another format, if you prefer).

Close Praat, and confirm that you have successfully modified the original Sound, saved it to disk under a new name, and left the original sound file intact.

Exercise 2: Taking measurements with the SoundEditor

Download "rain_in_spain.wav" from my website:

http://www.psych.uiuc.edu/~srjacksn/rain_in_spain.wav

Open it as a Sound Object in Praat, and open it in an Editor, and provide the following measurements:

- a. Total sound duration
- b. The pitch value for the point at time 0.40000 seconds.
- c. The average pitch for the selection from 0.125 sec to 0.478 sec
- d. The maximum pitch for that same selection
- e. The time point of the maximum pitch for that selection
- f. The average intensity (in dB) for the same selection

Exercise 3: Measuring pitch "manually"

Download "rain_in_spain.wav" as above.

Open it in an Editor.

Zoom to view the time span 1.715 sec to 1.755 sec.

Select time 1.7246 to 1.7421, and notice how this selection encompasses a little more than two periods. That is, you can see a general repetition of the waveform, and it goes through a little more than two cycles in this selection.

Find the zero crossings at the beginning and end of the first period in the previous selection. Aim for the zero crossings just after the biggest negative “valley” in the waveform.

Select the time between these zero crossings using the precision selection method (i.e., the Select menu).

What is the length of this segment? What is the “pitch” of this segment in Hz (assuming of course that it repeats at this rate).

Appendix B: Practice Exercise Answers

Exercise 1: Opening, changing, and saving a sound

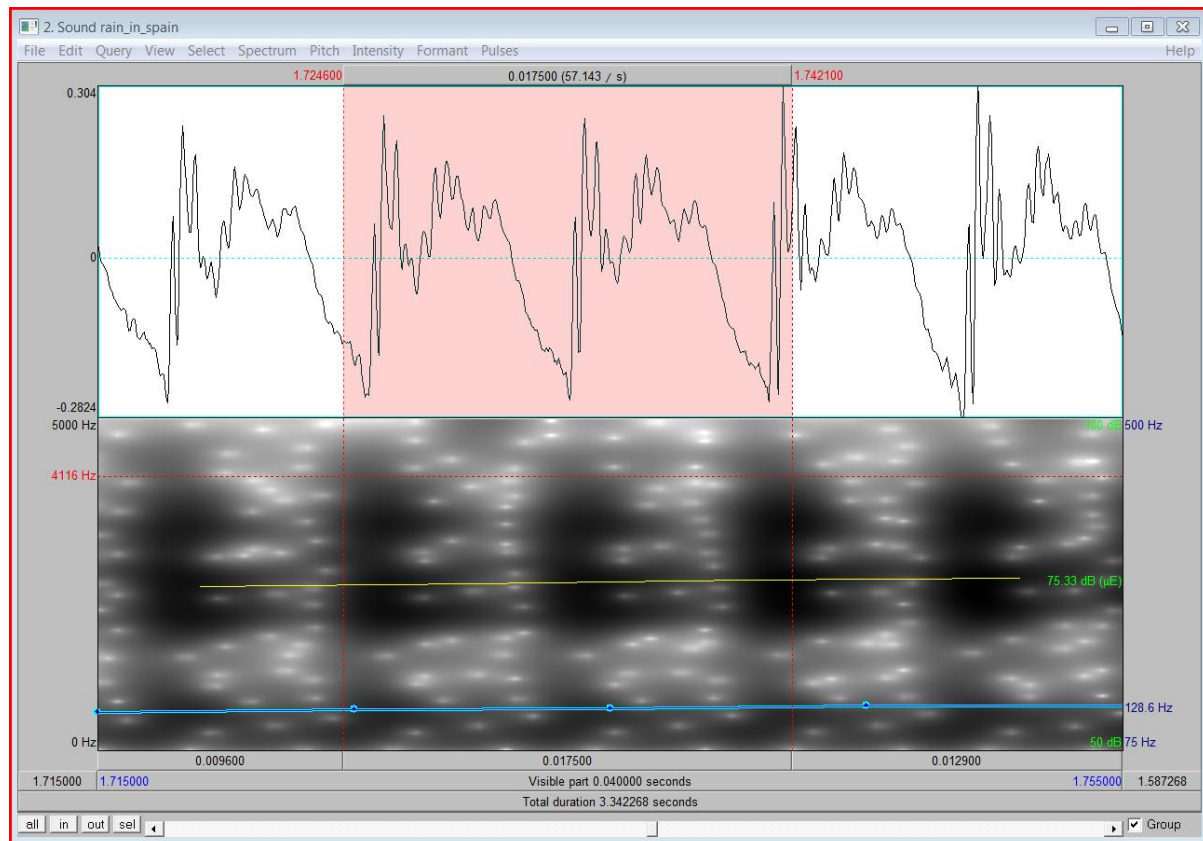
The “answer” is just whether you accomplished the objective without messing up your original sound file.

Exercise 2: Taking measurements with the SoundEditor

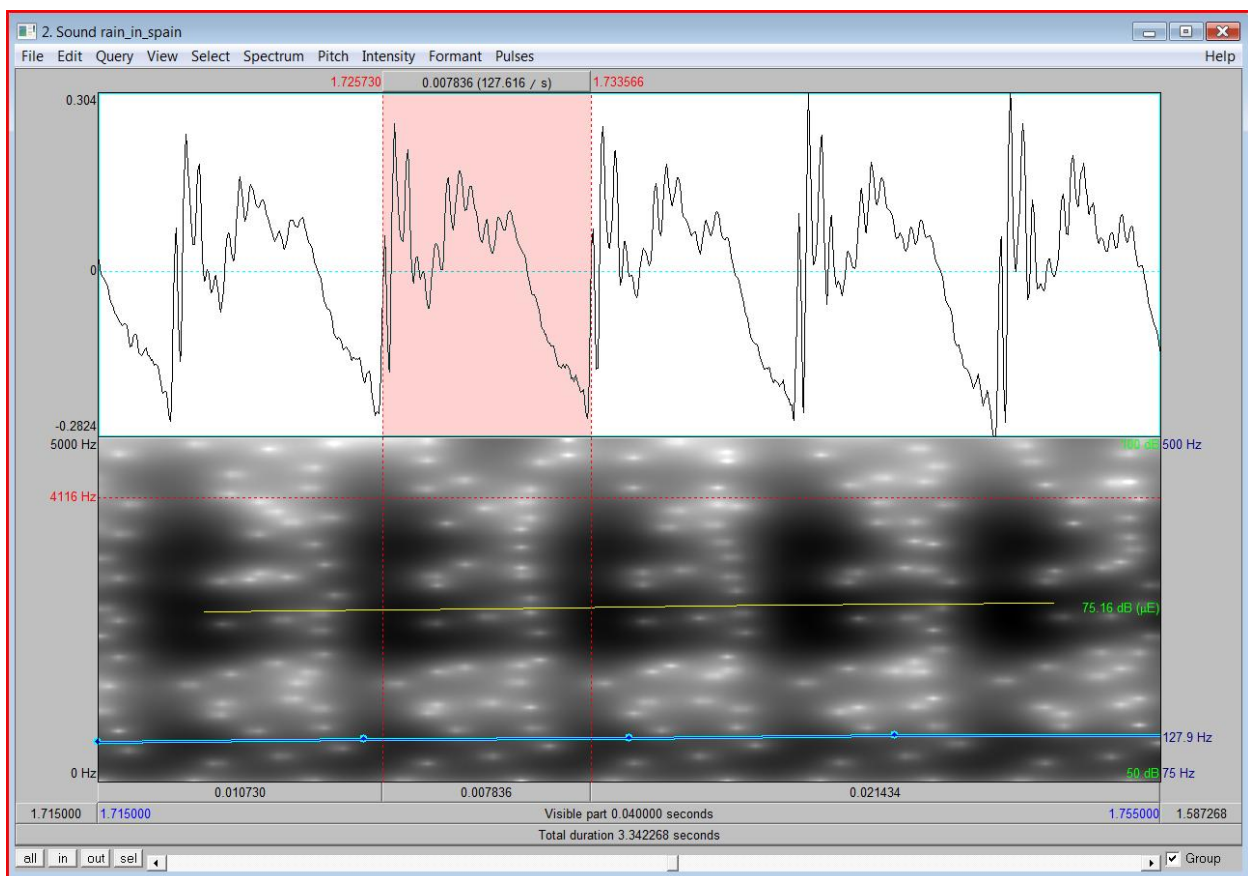
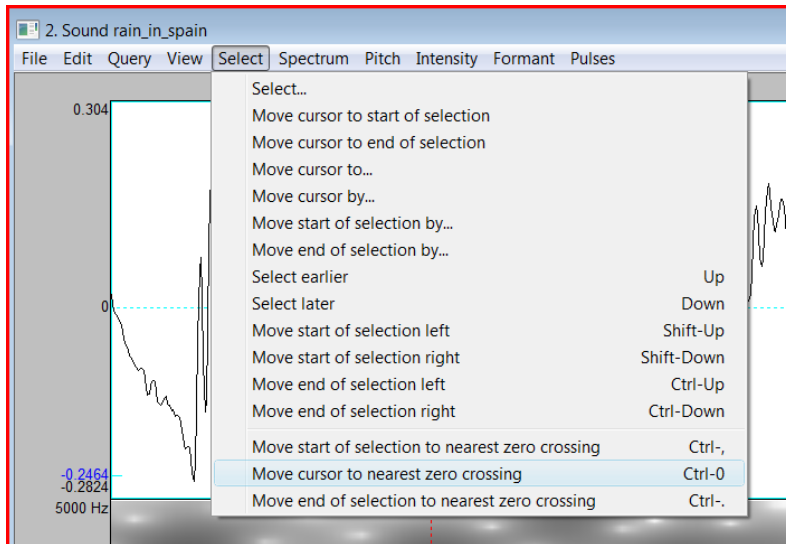
- a. 3.34 seconds
- b. 154.14 Hz
- c. 137.34 Hz
- d. 154.44 Hz
- e. 0.406681 sec
- f. 76.43 dB

Exercise 3: Measuring pitch “manually”

Here’s the view you should have started with:



I picked the zero crossings at time 1.725730 and 1.733566, using the “Move cursor to nearest zero crossing” option under the Select menu and recording the precise time values on both sides of the period, and then using the Select... tool to select precisely the time between these two points.



Given these zero crossings, the length of the period is **0.007836 seconds**, which gives a “pitch” of **127.616 Hz**.

I am putting “pitch” in scare quotes, because it is slightly nonsensical to talk about the pitch at a single point in time, or even over a single period, since pitch is probably not perceived over a single period. But assuming the waveform period repeats at the same rate as this selected period, this single-period “pitch” would be accurate.