

Speech Science

WiSe 2023

Exercise 4: Introduction to Praat

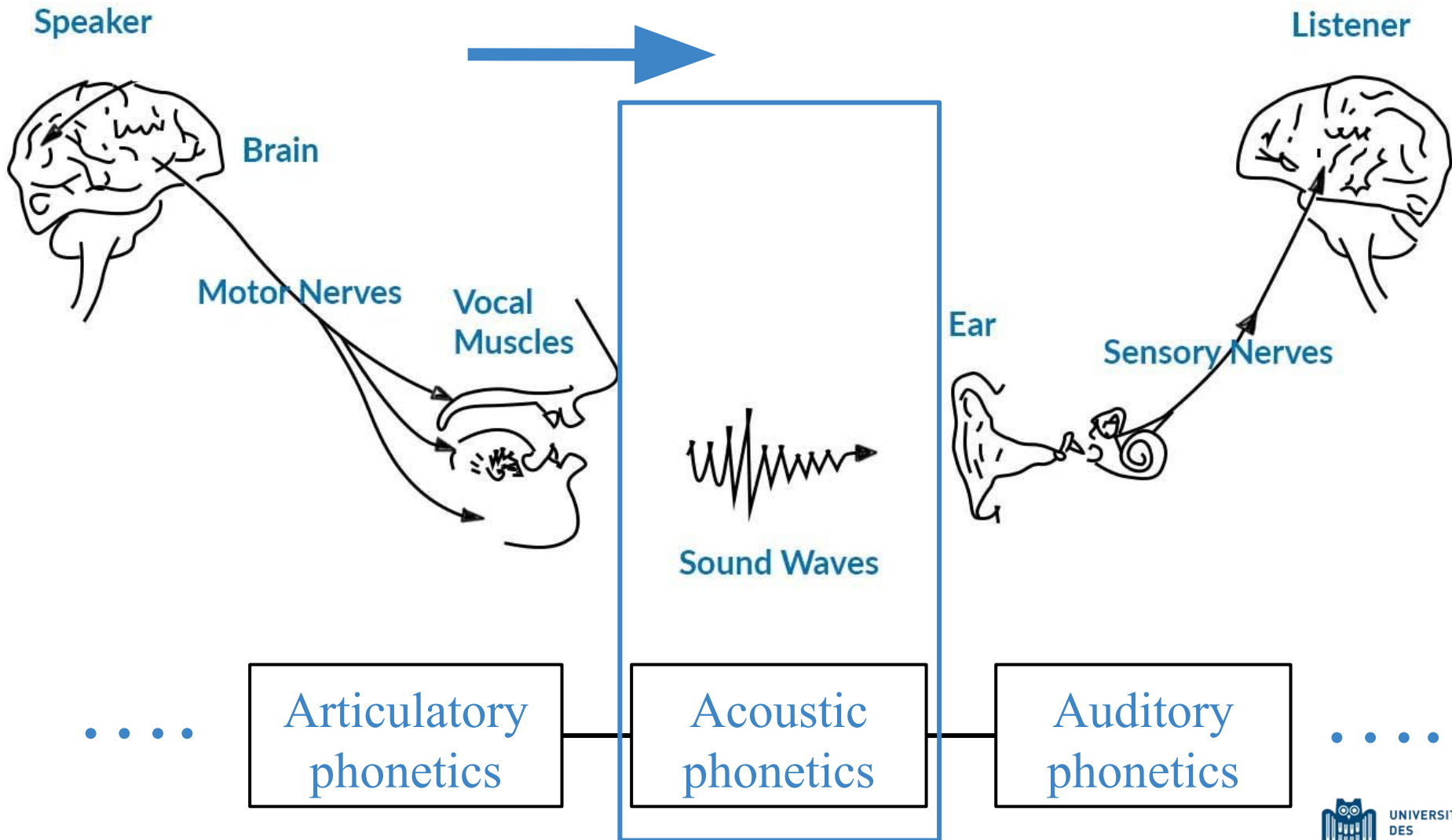
Nov 27, 2023





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Language Science and Technology
Saarland University



Speech chain



 Praat: doing phonetics by computer 		
Download Praat: <ul style="list-style-type: none">* Macintosh* Windows* Linux, FreeBSD* SGI, Solaris, HPUX* the source code	Information on Praat: <ul style="list-style-type: none">* Introductory tutorial: choose Intro from Praat's Help menus.* Extensive manuals and tutorials: in Praat's Help menus.* Beginner's manuals by others.* Paul Boersma's publications on algorithms and tutorials.	
 Paul	The authors Paul Boersma and David Weenink Phonetic Sciences , University of Amsterdam Spuistraat 210 1012VT Amsterdam The Netherlands	 David

<http://www.fon.hum.uva.nl/praat/>

Praat

Acoustic analysis program

Best known for its ability to:

- Visualize, label, and segment audio files
- Perform spectral and temporal analyses
- Synthesize and manipulate speech



Praat scripting

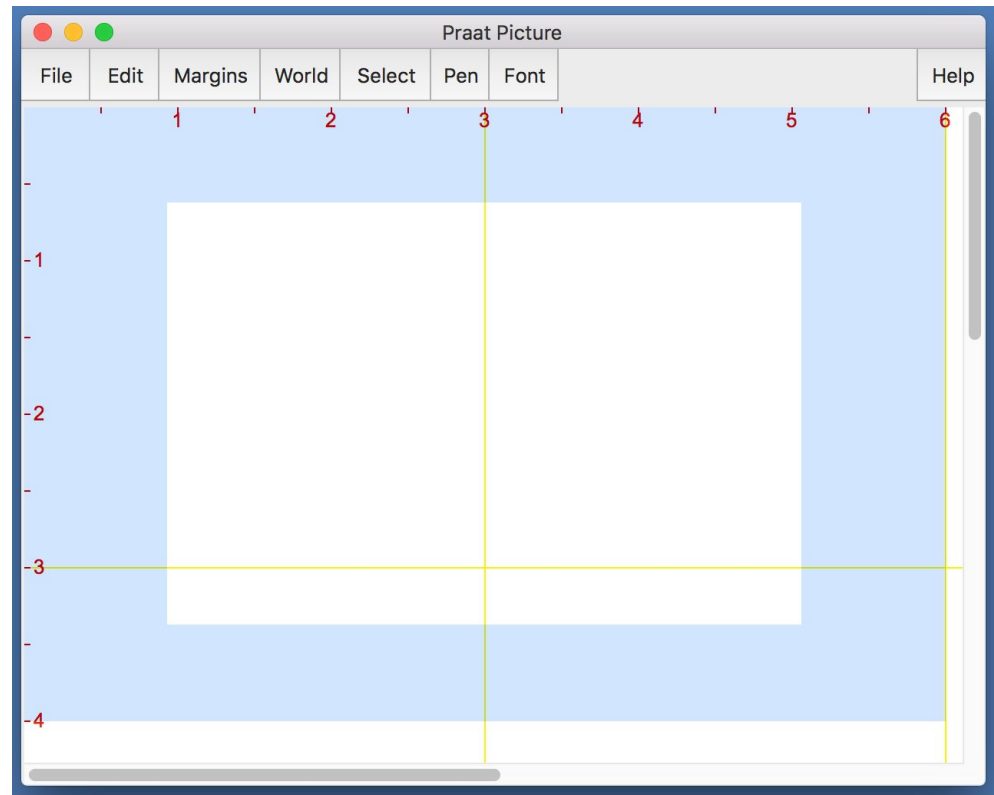
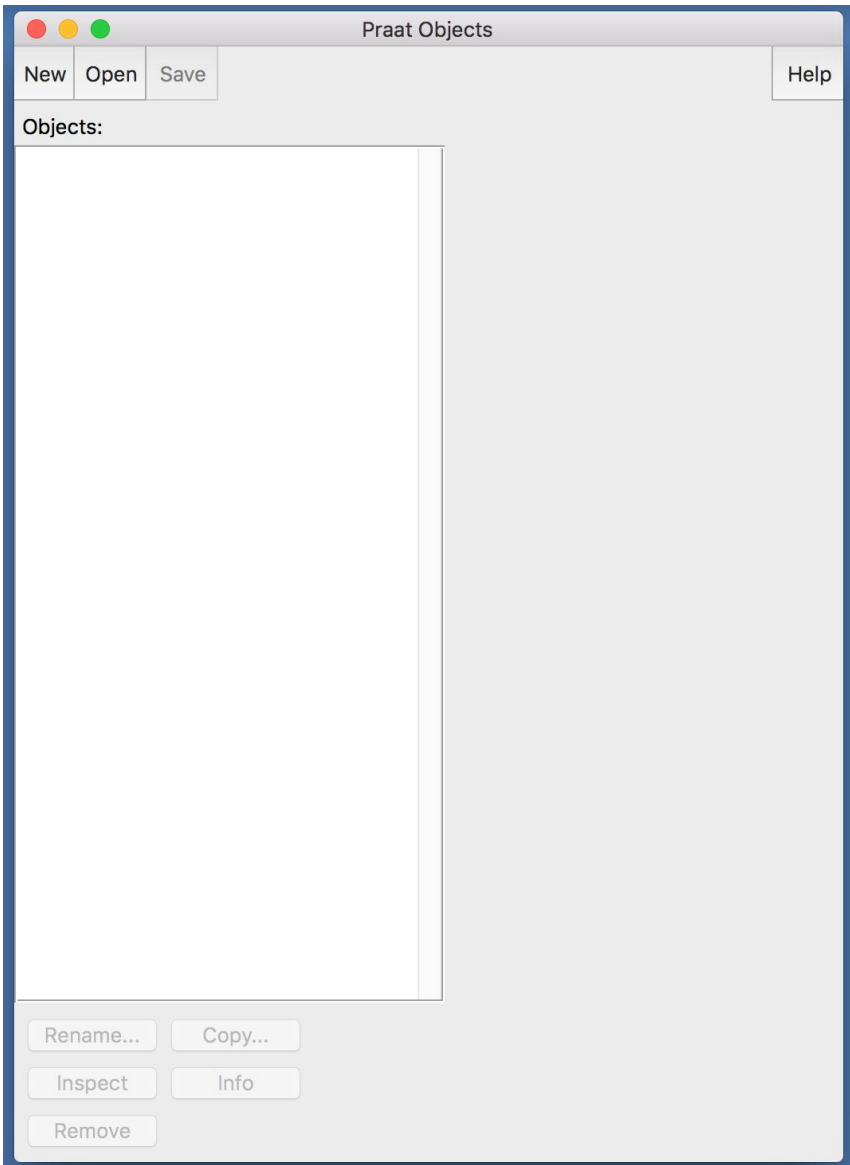
Praat: not only a program, but also a language

Why do I want to know Praat the language?

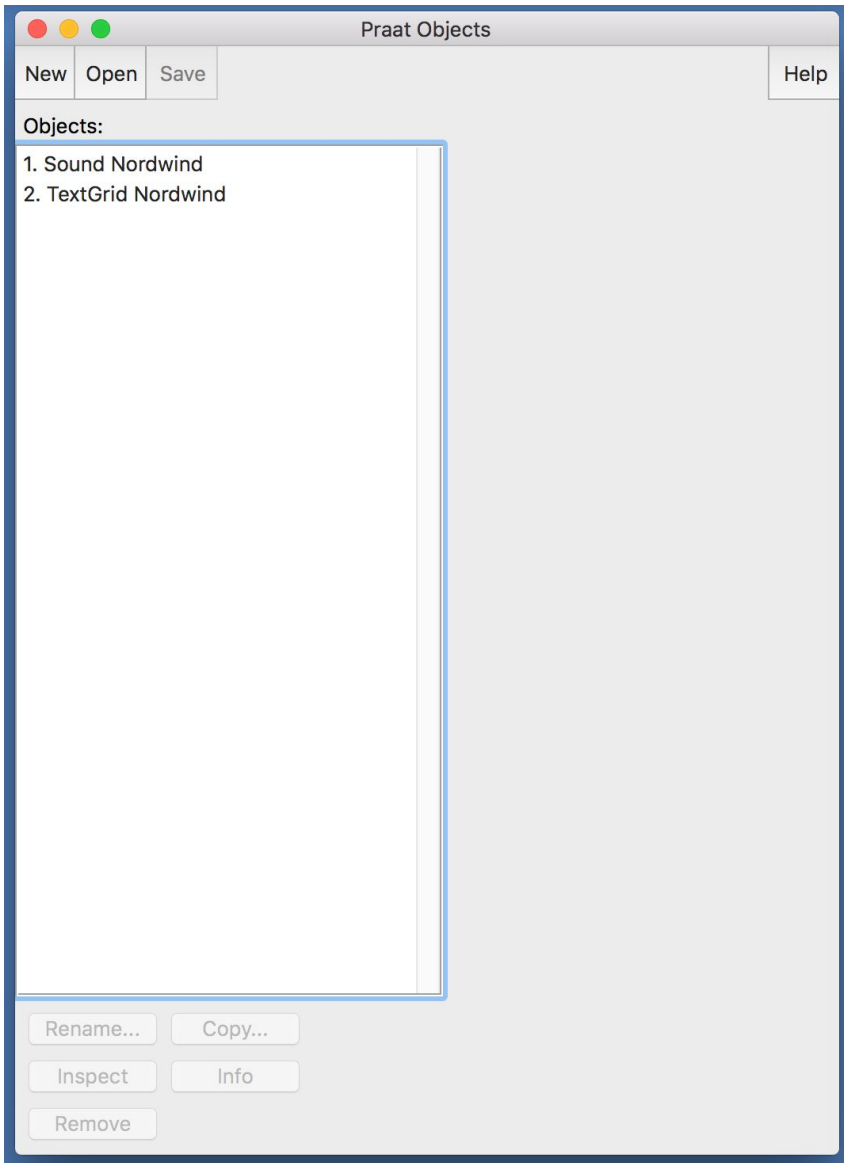
- Save time in the long run
- Minimize human error → consistency
- Allow others to repeat the process identically → replicability
- Easily correct mistakes
- **Easily process large amounts of data**



Praat



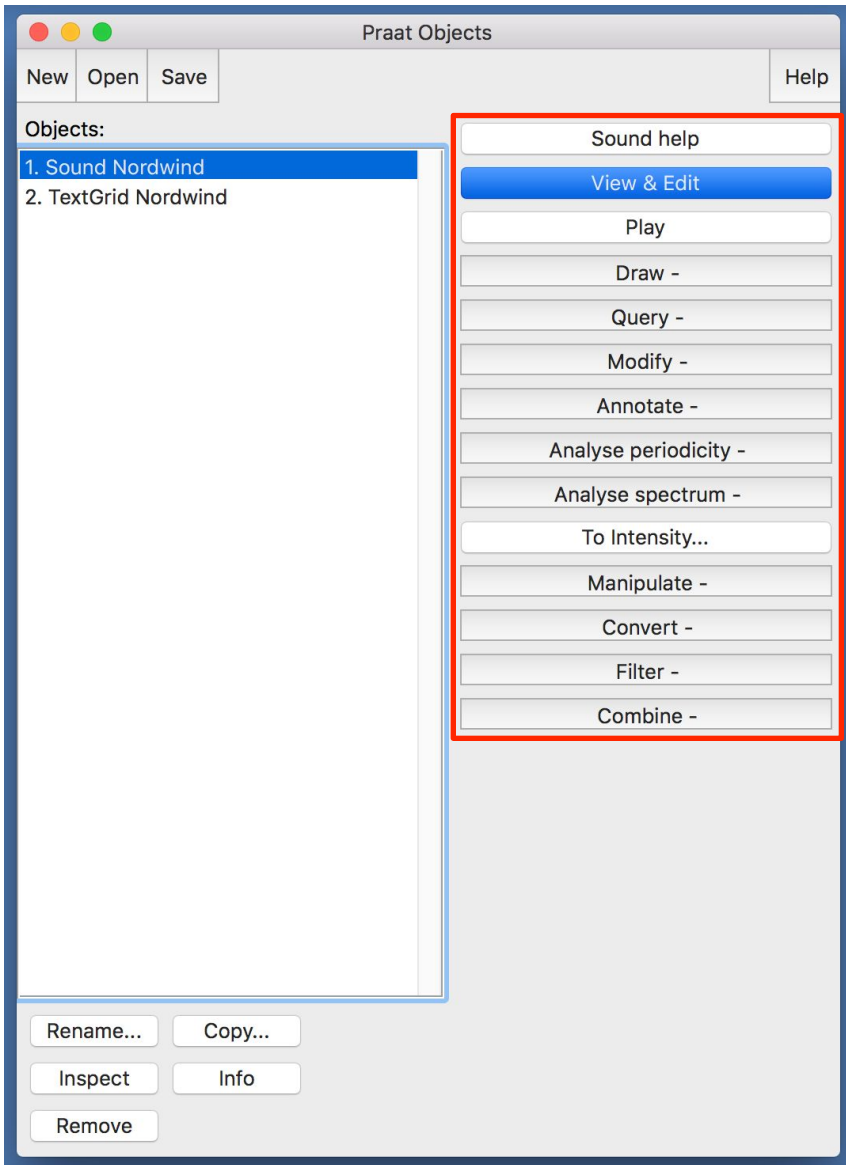
Object window



Praat operates with *objects*.

e.g. *Sound*-objects or
TextGrid-objects

Object window

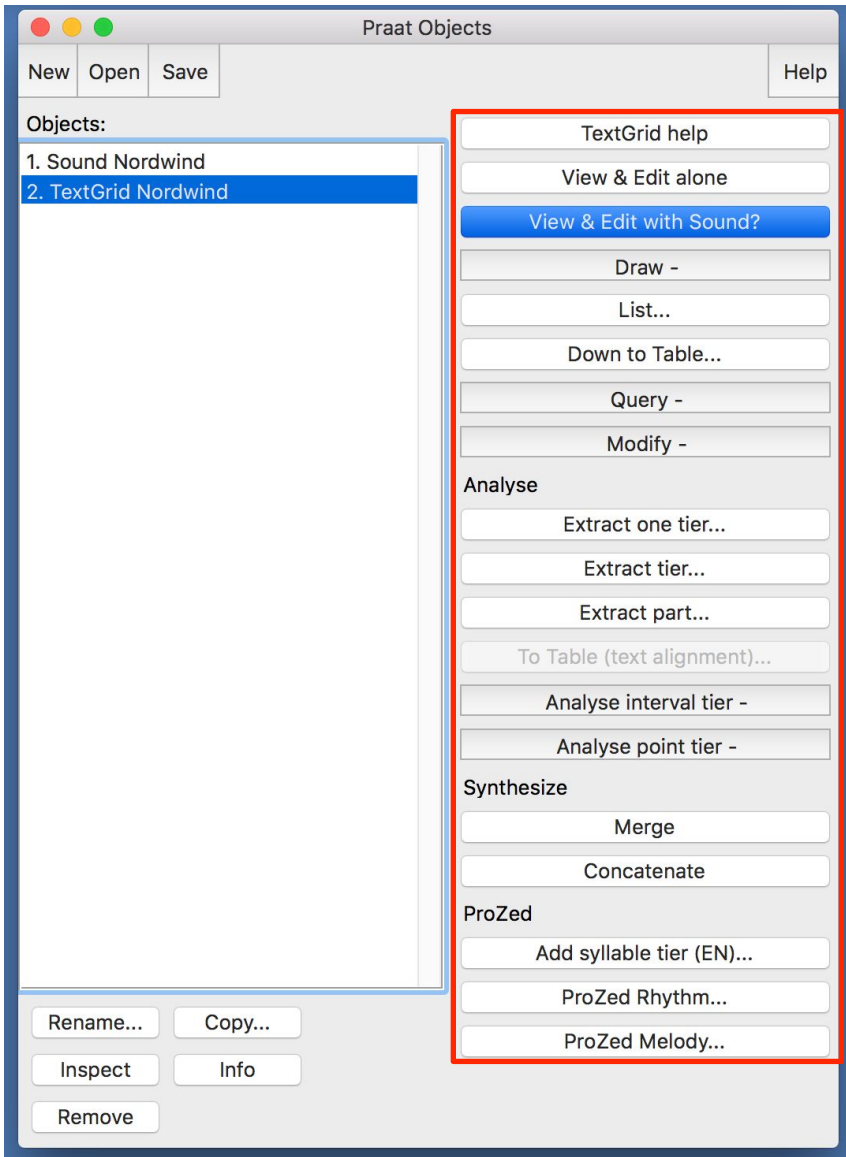


Praat operates with *objects*.

e.g. *Sound*-objects or
TextGrid-objects

here: *Sound*-object
selected

Object window

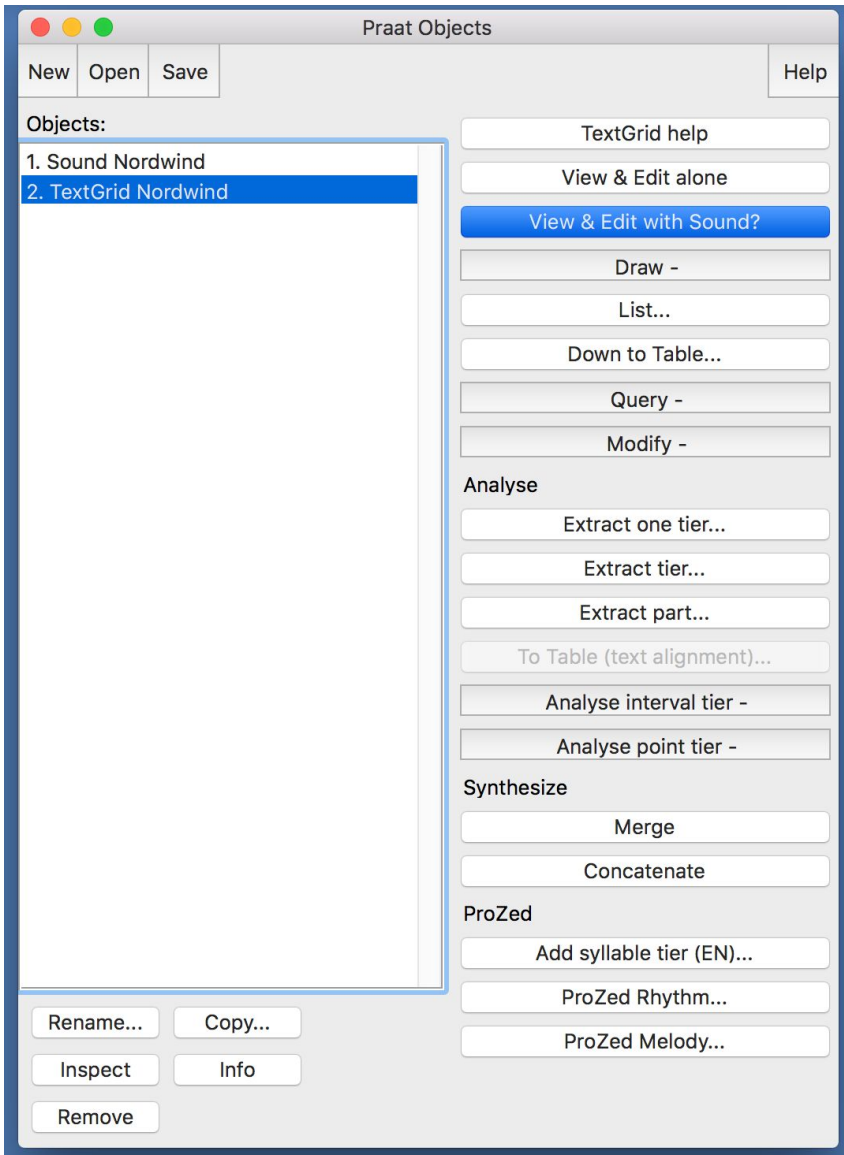


Praat operates with *objects*.

e.g. *Sound*-objects or
TextGrid-objects

here: *TextGrid*-object
selected

Object window

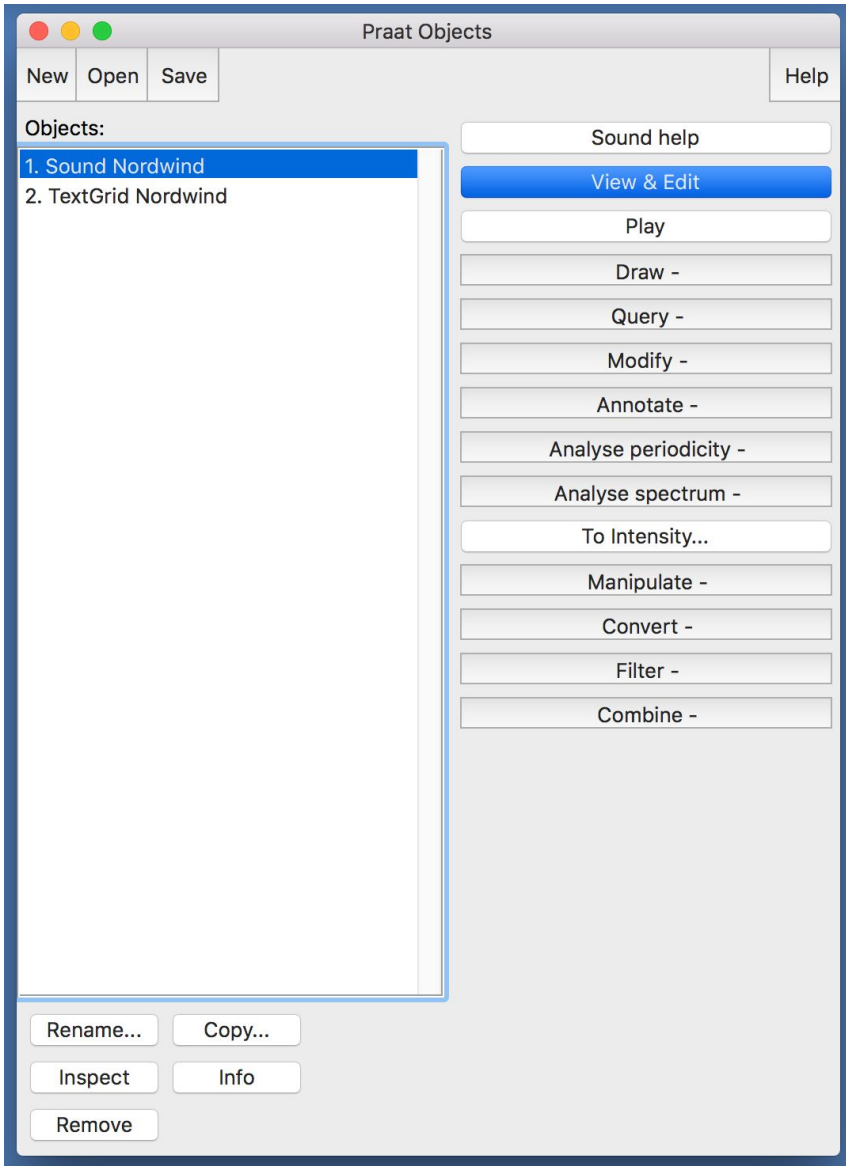


Objects are transient –
don't forget to save your
changes!

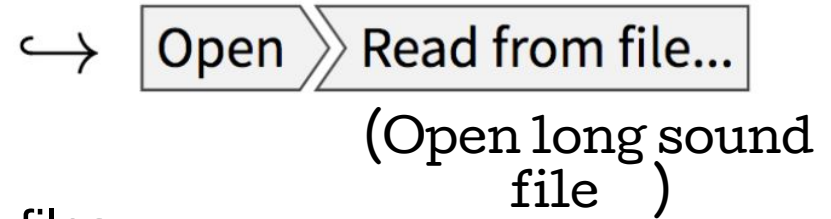
For most operations
there is no way to undo!

e.g. *Remove* will remove objects definitively
and without asking for confirmation!

Object window



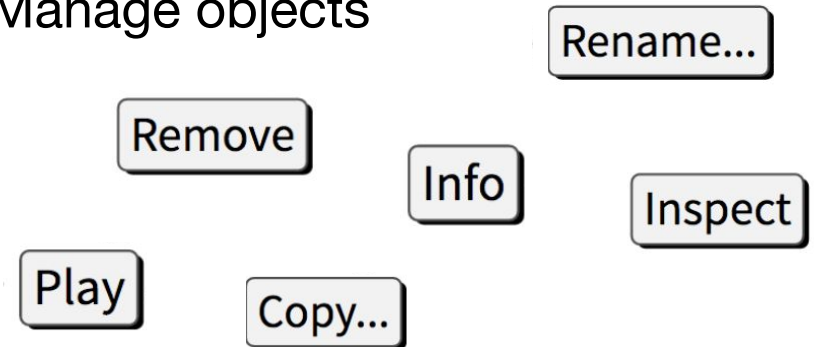
Load files



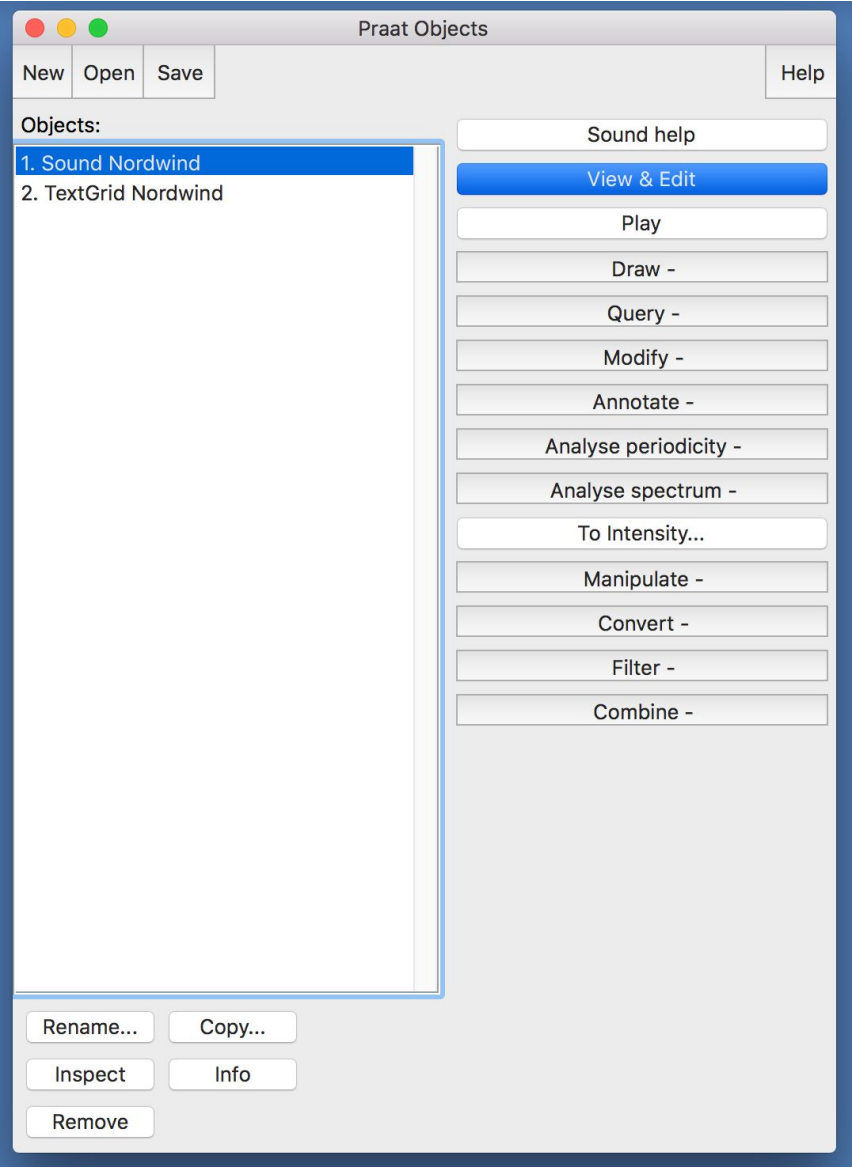
Save files



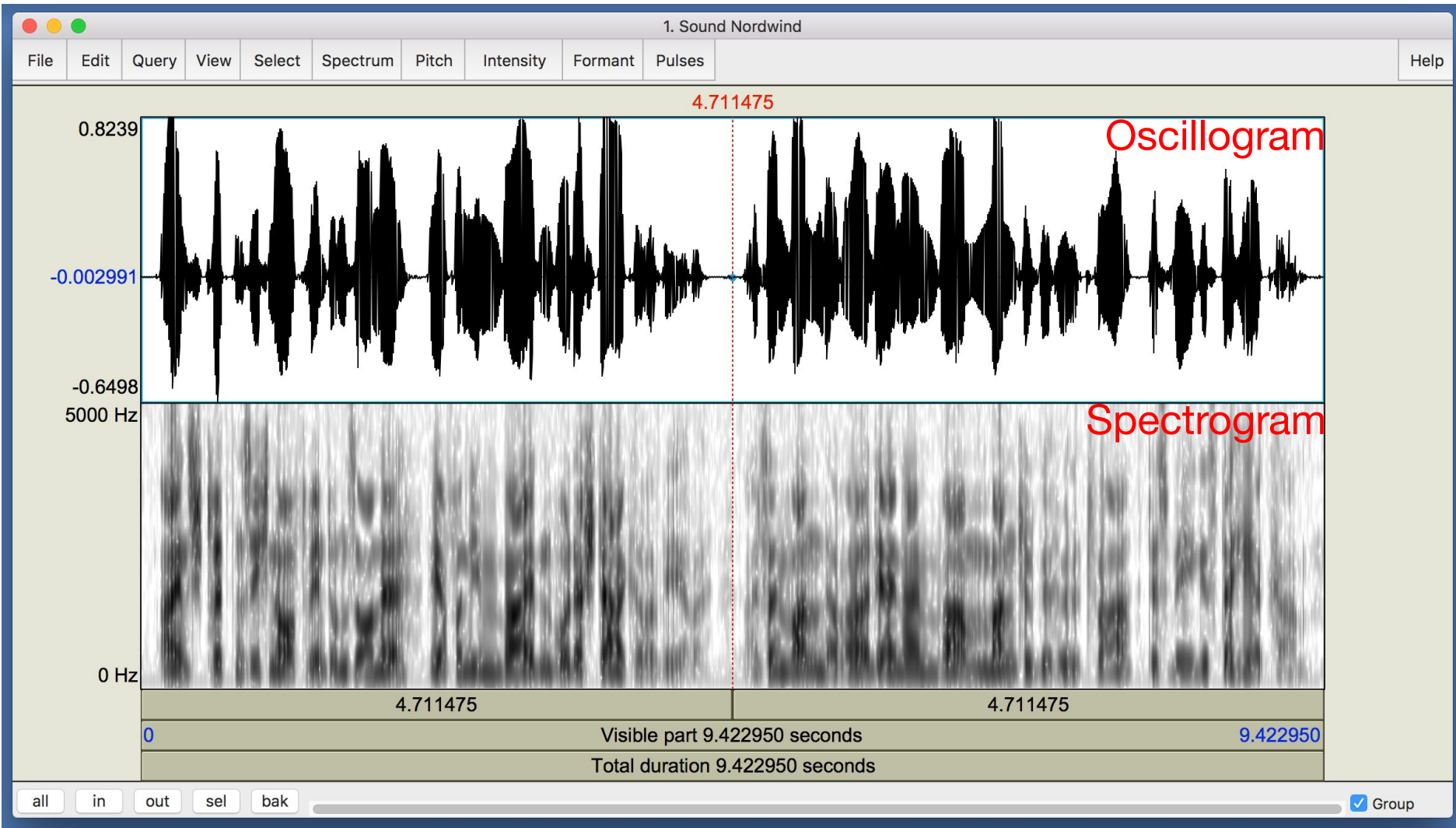
Manage objects



Open editor window



Editor window



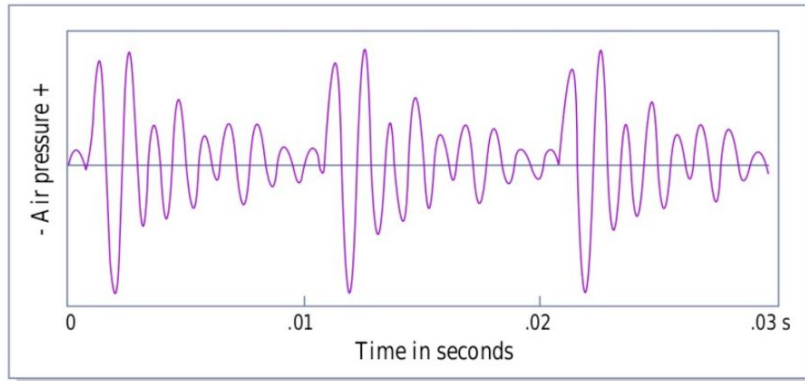


Image by MIT OpenCourseWare.

Segment of [ɔ]

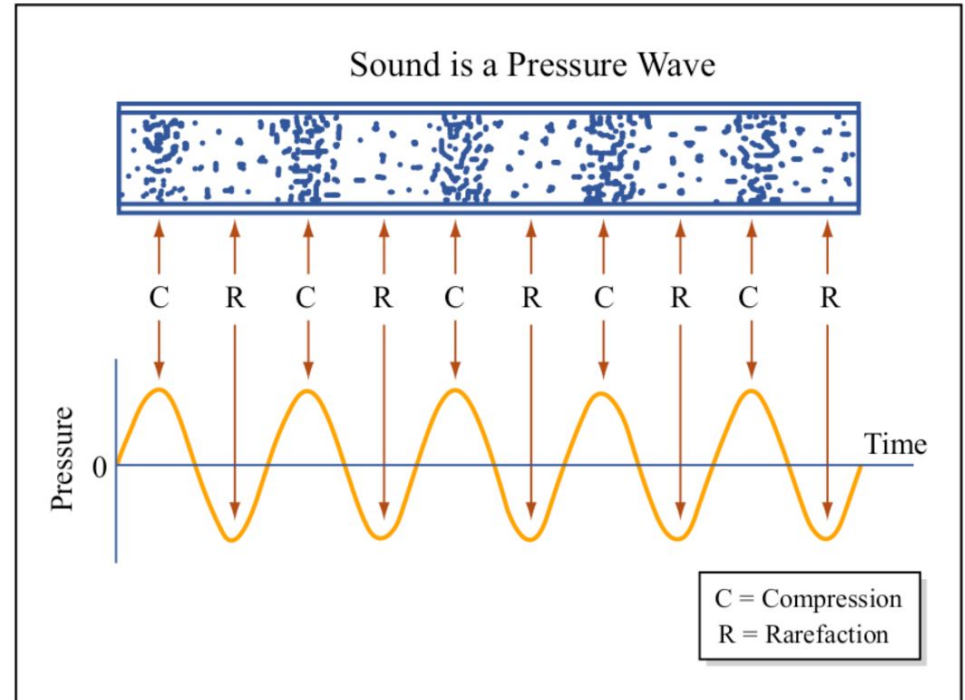


Image by MIT OCW.
Adapted from The Physics Classroom Tutorial.

Oscillogram and Spectrogram

We are looking at the speech signal as...

...change in **sound pressure p** over **time t** .

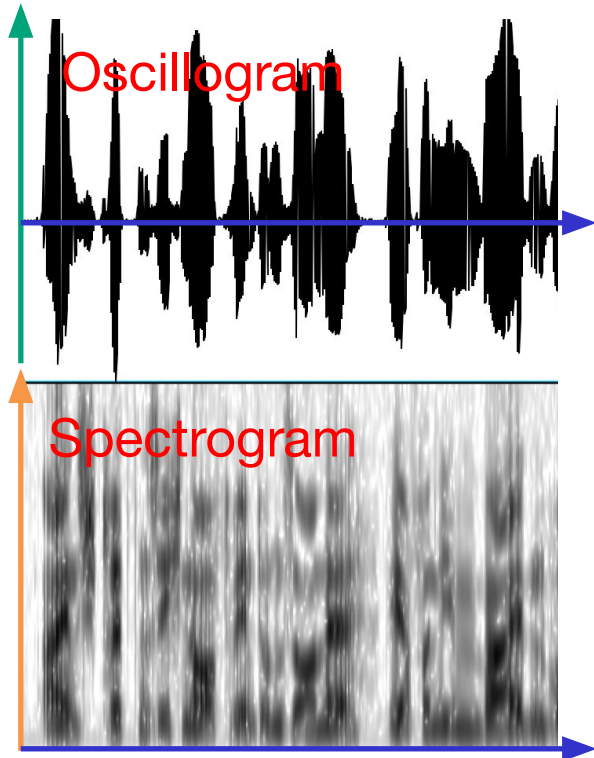
...**frequency f** over **time t** .

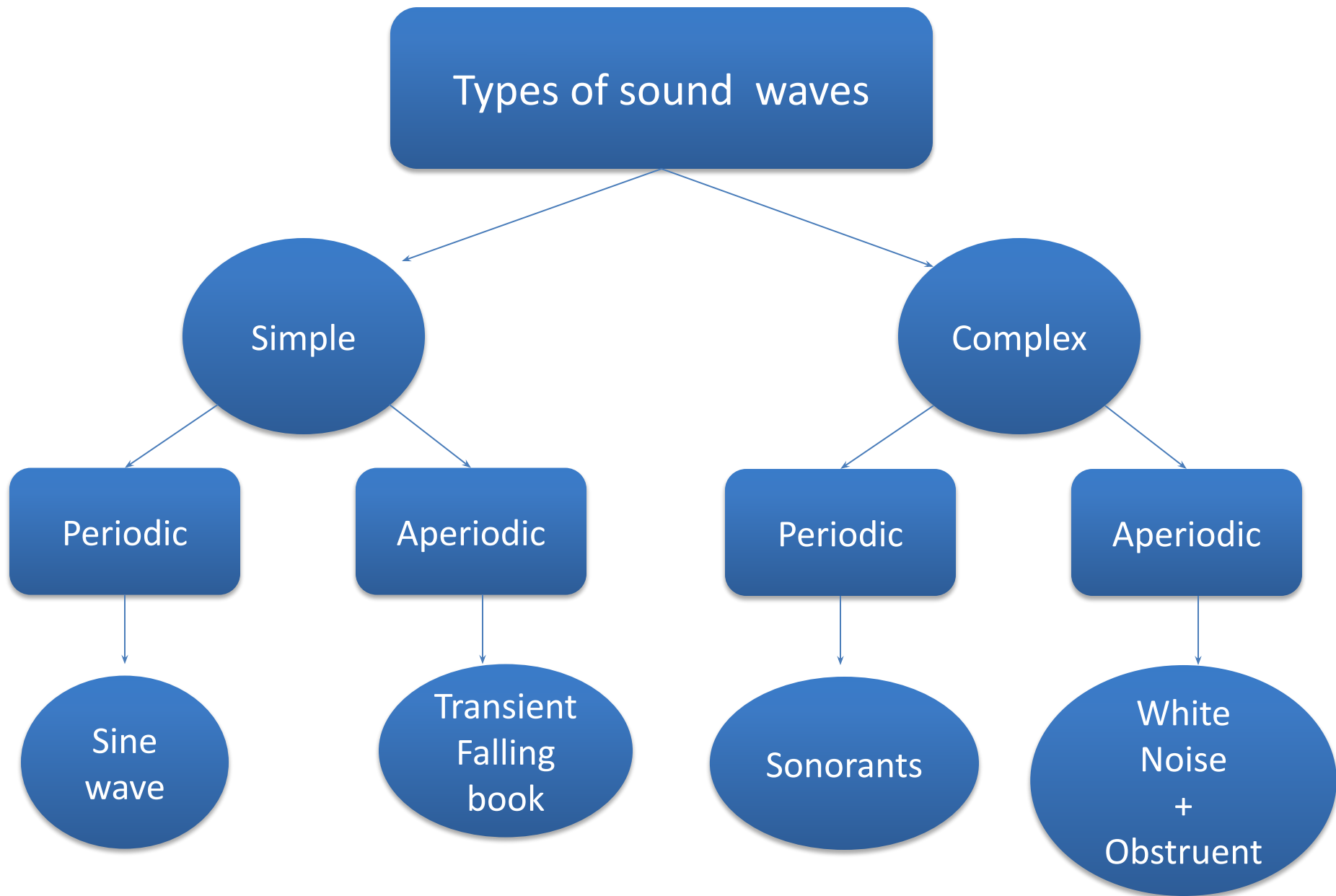
The darker the shading in a given area,
the higher the **sound pressure p** .

sound pressure → **volume**

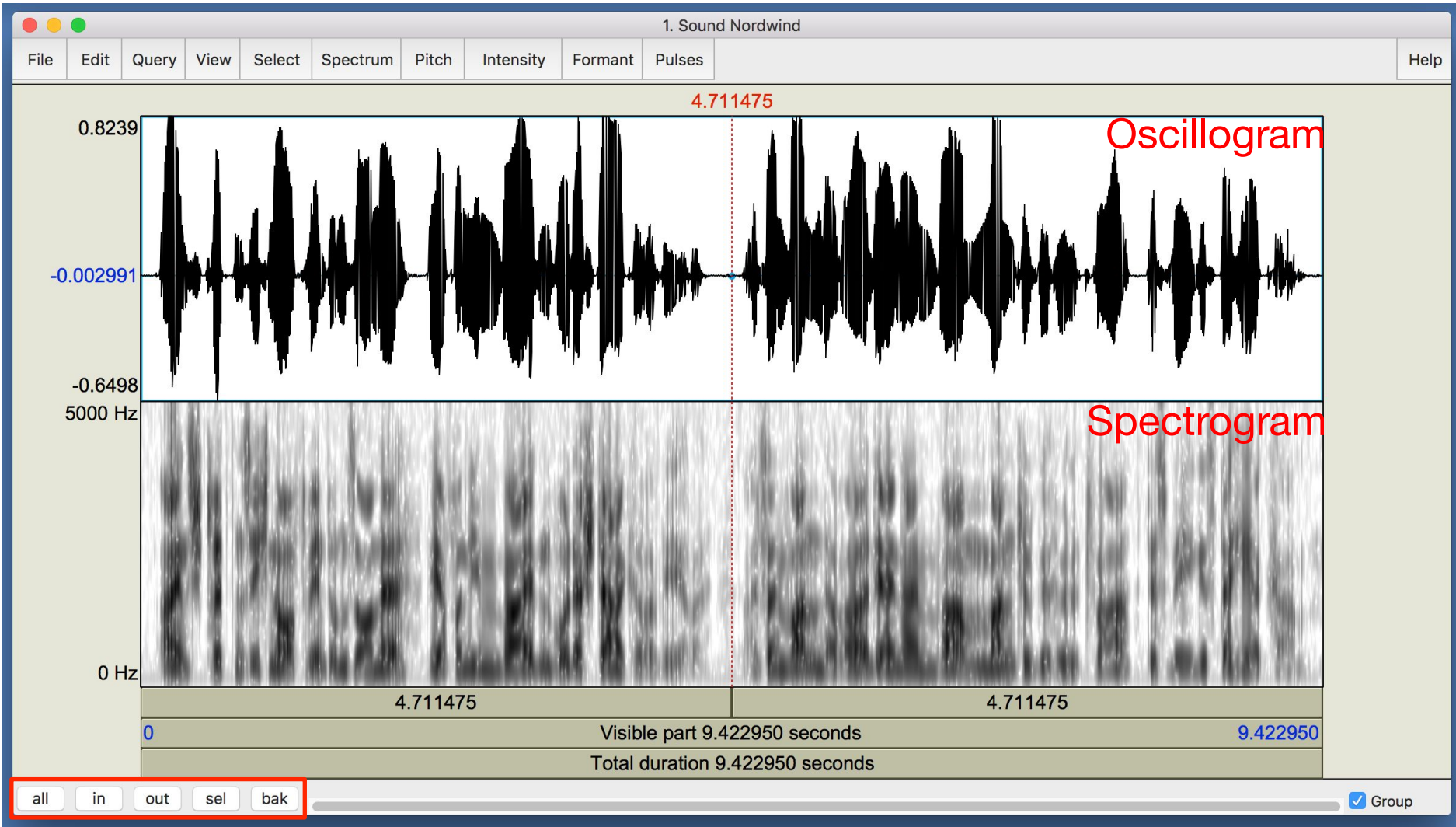
time → **duration**

frequency → **pitch**





Editor window



		all	in	out	sel	bak
cmd	+	a	i	o	n	b

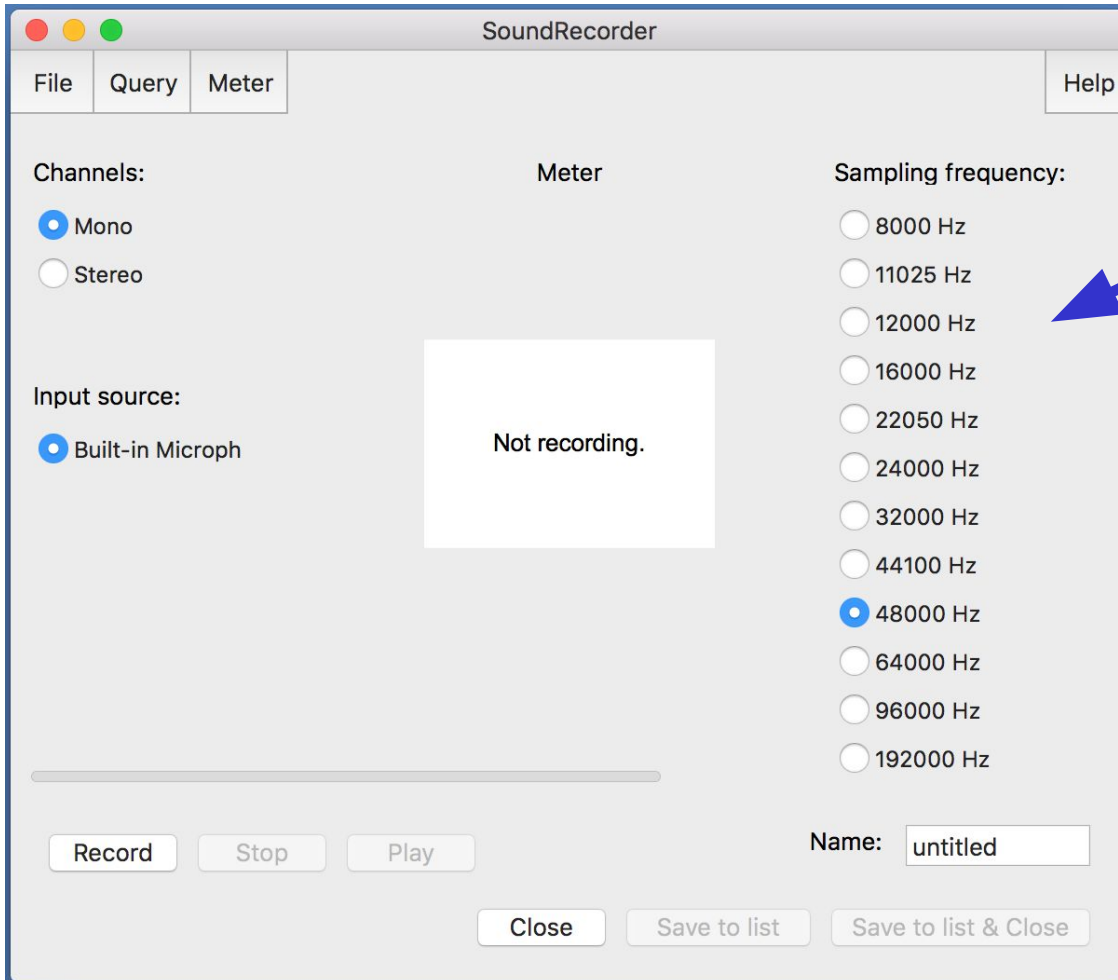
Recording



Recording with Praat

↪ New Record mono Sound...

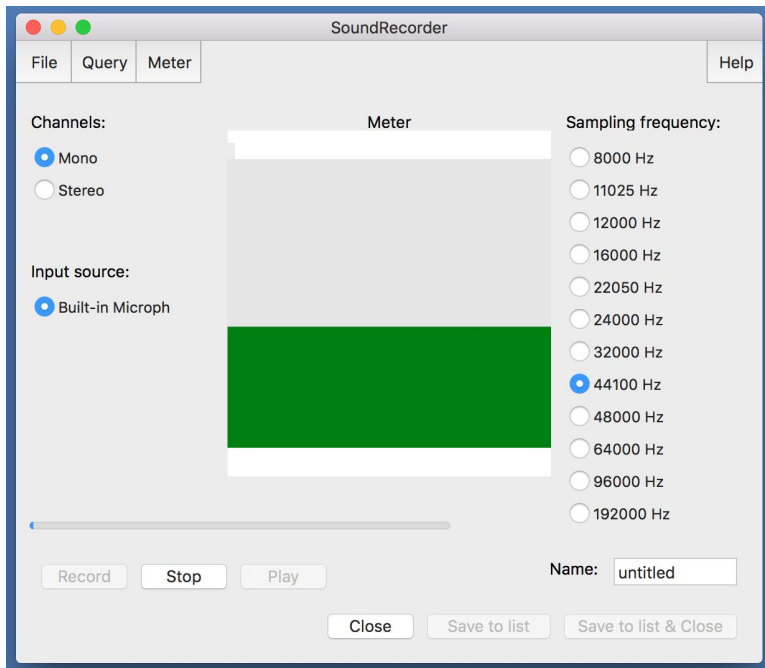
↪ New Record stereo Sound...



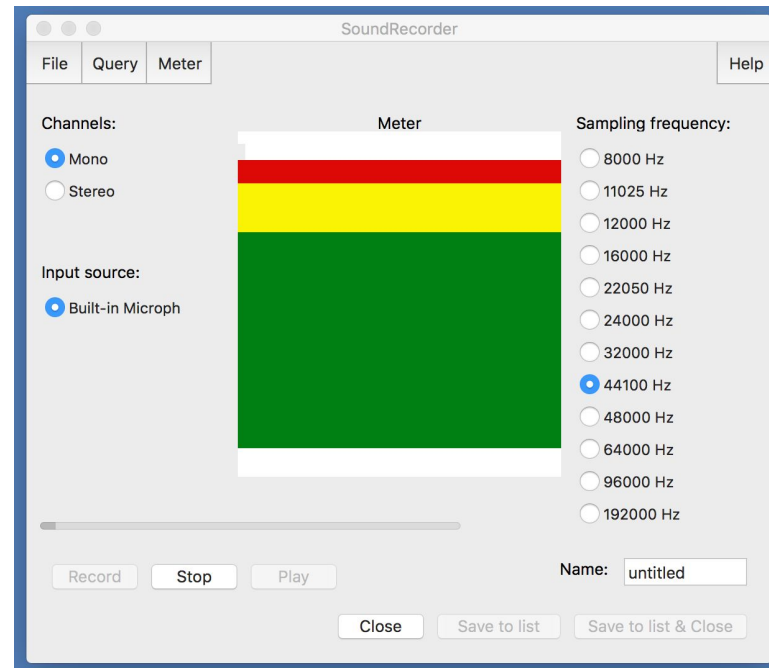
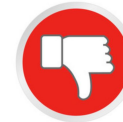
Choose sampling frequency.

Recording with Praat

Perform a test recording to balance the input signal.
Stay within the green area of the meter to avoid clipping.



The screenshot shows the SoundRecorder application window. The 'Meter' window is open, displaying a green bar representing the recording level. The level is within the green area, indicating a good recording level. The 'Channels' are set to 'Mono' and the 'Input source' is 'Built-in Microph'. The 'Sampling frequency' is set to '44100 Hz'. The 'Name' field is 'untitled'. The 'Record', 'Stop', and 'Play' buttons are visible at the bottom.



The screenshot shows the SoundRecorder application window. The 'Meter' window is open, displaying a recording level that has exceeded the green area and is now in the red area, indicating clipping. The 'Channels' are set to 'Mono' and the 'Input source' is 'Built-in Microph'. The 'Sampling frequency' is set to '44100 Hz'. The 'Name' field is 'untitled'. The 'Record', 'Stop', and 'Play' buttons are visible at the bottom.

Recording with Praat

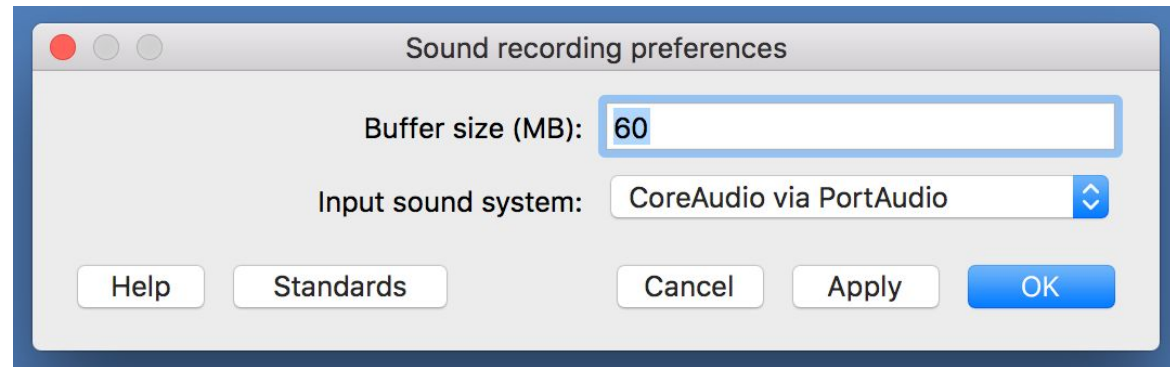
Record

Stop

Play

If the recording stops by itself, buffer size was probably set to low.

Praat >> Preferences >> Sound recording preferences...



Recording with Praat

(A) Dismiss a recording: again, or

(B) Keep a recording: or

The recording appears as a sound object in the object window, but is not saved yet!

Save → **Save as WAV file...**

(C) Keep a long recording: **File** → **Save as WAV file...**

Open → **Open long sound file...**

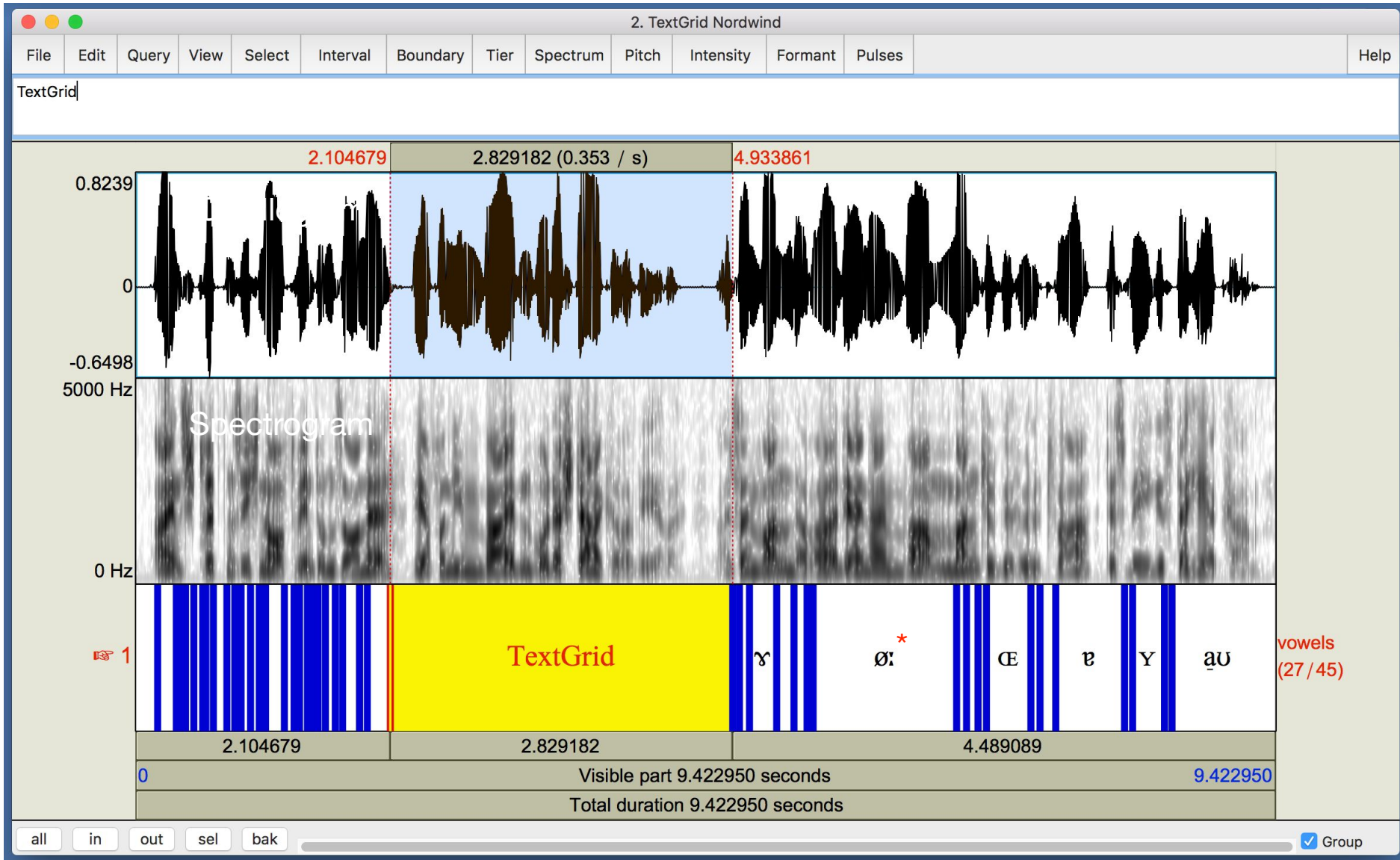
A longer recording cannot directly be turned into a sound object. It has to be saved as a *WAV file* from within the sound recorder and then opened as a *long sound file* in the object window.

Make a TextGrid

The screenshot shows the Praat Objects window. The 'Objects' list on the left contains '1. Sound Nordwind'. The 'Annotate' menu is open, and the 'To TextGrid...' option is selected. Other options in the menu include 'Annotation tutorial' and 'To TextGrid (silences)...'. The 'View & Edit' button is highlighted in blue. At the bottom of the window, there are buttons for 'Rename...', 'Copy...', 'Inspect', 'Info', and 'Remove'.

The 'Sound: To TextGrid' dialog box is shown. It has a title bar with three window control buttons. The main content area contains two text input fields. The first field is labeled 'All tier names:' and contains the text 'Mary John bell'. The second field is labeled 'Which of these are point tiers?' and contains the text 'bell'. At the bottom of the dialog, there are five buttons: 'Help', 'Standards', 'Cancel', 'Apply', and 'OK'.

Editor window



*For illustrational purposes only. No actual vowels were segmented here.

TextGrid – example

1. TextGrid Pnm02_Mn2m_ExpFill_14

File Edit Query View Select Interval Boundary Tier Spectrum Pitch Intensity Formant Pulses Help

<p:>

1.626855 (0.615 / s)

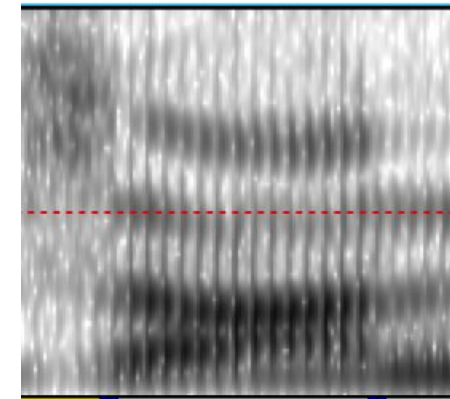
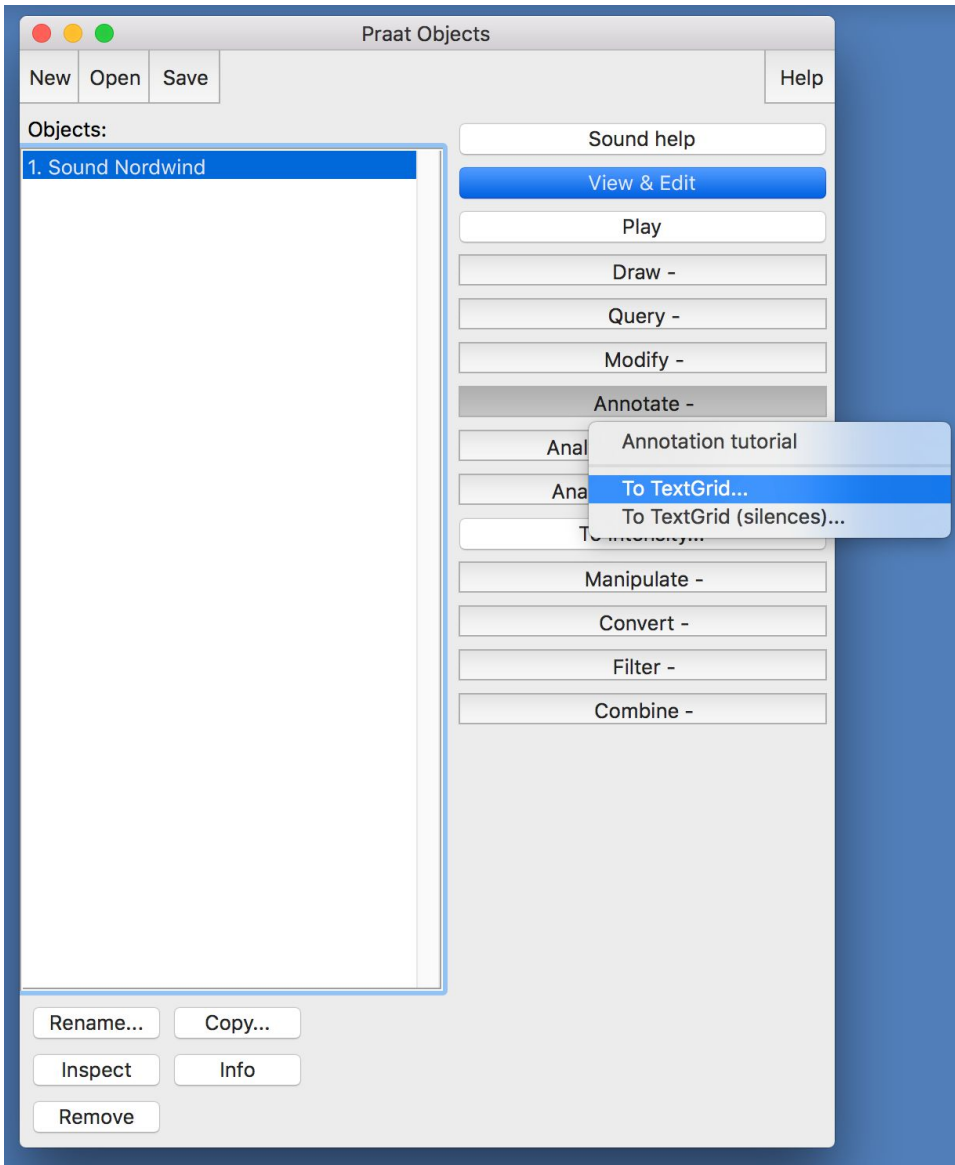
1	<p:>	k a l n 6	g l a U p t	d i : z @	g @ S I C t @	<p:>	KAN												
2	<p:>	k a l . n 6	g l a U p t	d i : . z @	g @ . S I C . t @	<p:>	KAS												
3	<p:>	ka l	n6	glaUp	di: z@	g@ SIC t@	KAS												
4	<p:>	k	a l	n 6	g	l	a U	p	d	i:	z	g	S	I	C	t	@	<p:>	KAU (1/22)
5	<p:>	Keiner	glaubt	diese	Geschichte	<p:>	ORT												
6					Geschichte		FAR												
7							KOM (2)												

0.472598 0.472598 Visible part 1.626855 seconds 2.099453 0.346485

Total duration 2.445937 seconds

all in out sel bak Group

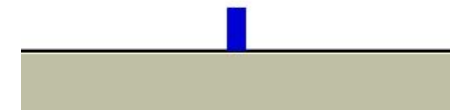
TextGrid: Tiers types



interval tier



point tier



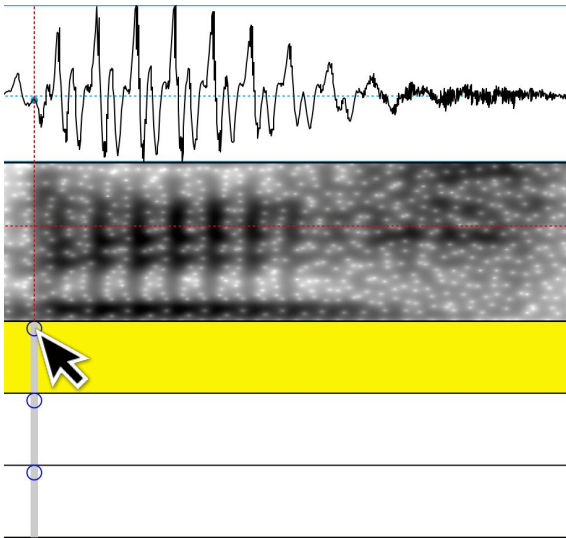
Annotate a TextGrid

To set a boundary, select a point in time and click on a circle.

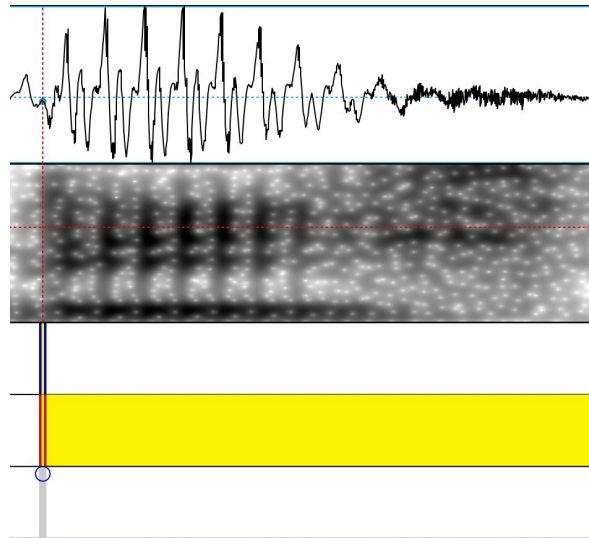
Boundaries can still be manually moved after that.

Press time. to move boundaries on several tiers at the same time.

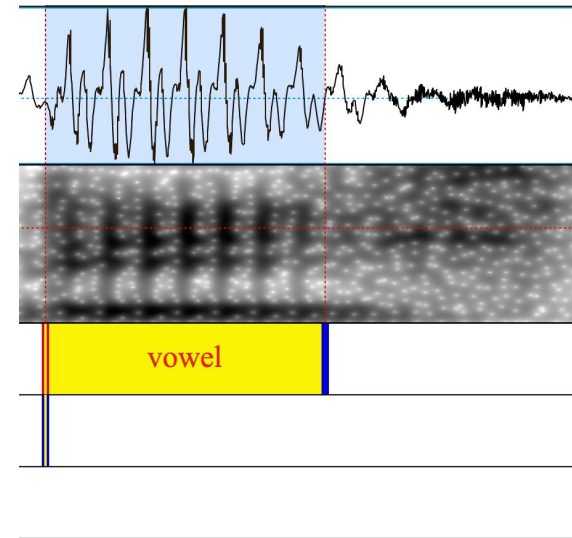
(1)



(2)



(3)



To delete a boundary, select it and press

+

Assignment 3

Instructions: Record yourself saying the following passage. Create two interval tiers (orthography and IPA) and annotate. If you are unable to record yourself:

The North Wind and the Sun

The North Wind and the Sun were disputing which was the stronger when a traveler came along wrapped in a warm cloak. They agreed that the one who first succeeded in making the traveler take his cloak off should be considered stronger than the other. Then the North Wind blew as hard as he could, but the more he blew, the more closely did the traveler fold his cloak around him; and at last the North Wind gave up the attempt. Then the Sun shone out warmly and immediately the traveler took off his cloak. And so the North wind was obliged to confess that the Sun was the stronger of the two.

Introduction to Praat: Video Tutorials

The screenshot shows the YouTube channel page for 'Linguistiklabor Albert-Ludwigs-Universität Freiburg'. The channel name is at the top, followed by the handle '@linguistiklaboralbert-ludw3514' and '564 subscribers'. A 'Subscribe' button is in the top right. Below the channel name are navigation tabs: HOME, VIDEOS, PLAYLISTS, COMMUNITY, CHANNELS, and ABOUT. The main content area displays a grid of seven video thumbnails, each with a pink lip icon and a yellow Praat logo. The videos are arranged in two rows: the top row has four videos and the bottom row has three. Each video thumbnail includes the title, duration, and view count.

Video Title	Duration	Views	Time Ago
Praat Tutorial: 7. Scripts	4:26	7.3K	3 years ago
Praat Tutorial: 6. Synthetic Vowels and Speech	3:24	3.3K	3 years ago
Praat Tutorial: 5. The Picture Window	4:30	4K	3 years ago
Praat Tutorial: 4. Vowel Formant Measurements	3:11	16K	3 years ago
Praat Tutorial: 3. Annotations	3:31	7.6K	3 years ago
Praat Tutorial: 2. Getting a Sound	3:26	6.9K	3 years ago
Praat Tutorial: 1. The interface	1:39	14K	3 years ago

<https://www.youtube.com/@linguistiklaboralbert-ludw3514/videos>

Praat Scripting Tutorial

Scripting

This is one of the tutorials of the Praat program. It assumes you are familiar with the [Intro](#).

A *script* is a text that consists of menu commands and action commands. If you *run* the script (perhaps from a [ScriptEditor](#)), the commands are executed as if you clicked on them.

You can read this tutorial sequentially with the help of the "< 1" and "1 >" buttons.

[Scripting 1. Your first scripts](#) (how to create, how to run, how to save)

[Scripting 2. How to script settings windows](#) (numeric, boolean, multiple-choice, text, file)

[Scripting 3. Simple language elements](#)

[Scripting 3.1. Hello world](#) (writeInfoLine, appendInfoLine)

[Scripting 3.2. Numeric variables](#) (assignments)

[Scripting 3.3. Numeric queries](#)

[Scripting 3.4. String variables](#) (assignments)

[Scripting 3.5. String queries](#)

[Scripting 3.6. "For" loops](#) (for, endfor)

[Scripting 3.7. Layout](#) (white space, comments, continuation lines)

[Scripting 4. Object selection](#)

[Scripting 4.1. Selecting objects](#)

[Scripting 4.2. Removing objects](#)

[Scripting 4.3. Querying objects](#)

[Scripting 5. Language elements reference](#)

[Scripting 5.1. Variables](#) (numeric, string)

[Scripting 5.2. Expressions](#) (numeric, string)

[Scripting 5.3. Jumps](#) (if, then, elsif, else, endif)

[Scripting 5.4. Loops](#) (for/endifor, while/endwhile, repeat/until)

[Scripting 5.5. Procedures](#) (@, procedure)

[Scripting 5.6. Arrays and dictionaries](#)

[Scripting 5.7. Vectors and matrices](#)

[Scripting 5.8. Including other scripts](#)

[Scripting 5.9. Quitting](#) (exitScript)

<https://www.fon.hum.uva.nl/praat/manual/Scripting.html>

Praat script resources

Page contents

[How to use this page](#)

[Directory of scripts by type and description](#)

[Links: other online collections of Praat scripts](#)

How to use this page

How to run a script

Scripts save **Praat** users time and effort by automating a sequence of operations. To run a Praat script, go to the **Control** menu in the **Praat objects** window and select **New Praat script**. Then pull up the code for the desired script by clicking on one of the links below. Copy all the code there (e.g. highlight and **Ctrl-C** on a PC) and paste it into the new **untitled script** window. Finally, select **Run > Run** (or type **Ctrl-R**) in the **untitled script** window to execute the script.

How to save a script or add it to the menu

In the open **untitled script** window with the new script pasted in the text box, go to the **File** menu to **Save** the script to a convenient location. The **Add to fixed menu...** command under **File** can be used to add the current script to one of the head menus in the **Praat objects** window. Menus can be edited (e.g. to remove previously added scripts) by going to **Control > Preferences > Buttons** and clicking on the desired command.

How to script in Praat

See the **Scripting tutorial** under **Help** in **Praat objects** or try any of the many online tutorials.

<http://phonetics.linguistics.ucla.edu/facilities/acoustic/praat.html>

More Premade Praat Scripts

The screenshot shows a GitHub repository page for 'stylerw / styler_praat_scripts'. The repository is public and has 73 stars, 25 forks, and 40 commits. The main content is a list of files and folders, including 'airflow_reader', 'formant_automeasure', 'nasality_automeasure', 'source_filter_vowel_resynth', 'spectrogram_settings', 'README.md', 'amplitude_measurerv2.praat', 'band_filterer.praat', and 'convert_to_aiff.praat'. The right sidebar contains an 'About' section with a description of the repository and a 'Releases' section indicating no releases are published.

stylerw / styler_praat_scripts Public

Notifications Fork 25 Star 73

<> Code Issues Pull requests Actions Projects Wiki Security Insights

master 1 branch 0 tags Go to file Code

stylerw Updated textgrid_and_trim a91c50f on Oct 23 40 commits

airflow_reader	Initial Commit	9 years ago
formant_automeasure	Update FormantMeasureVerifyv3.praat	2 years ago
nasality_automeasure	Changes to README	4 years ago
source_filter_vowel_resynth	Initial Commit	9 years ago
spectrogram_settings	Added some easy scripts to adjust spectrogram settings	2 years ago
README.md	Changes to README	4 years ago
amplitude_measurerv2.praat	Initial Commit	9 years ago
band_filterer.praat	Added Band Filtering Script	5 years ago
convert_to_aiff.praat	Initial Commit	9 years ago

About

This is a collection of Praat scripts, written, modified, or used by Will Styler, which he finds useful and thinks you might too!

savethevowels.org/will

Readme 73 stars 17 watching 25 forks

Releases

No releases published

https://github.com/stylerw/styler_praat_scripts