

Speech Science

WiSe 2023

Exercise 7: Pitch & Duration Manipulation

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Acoustic parameters of prosody

Acoustic parameters

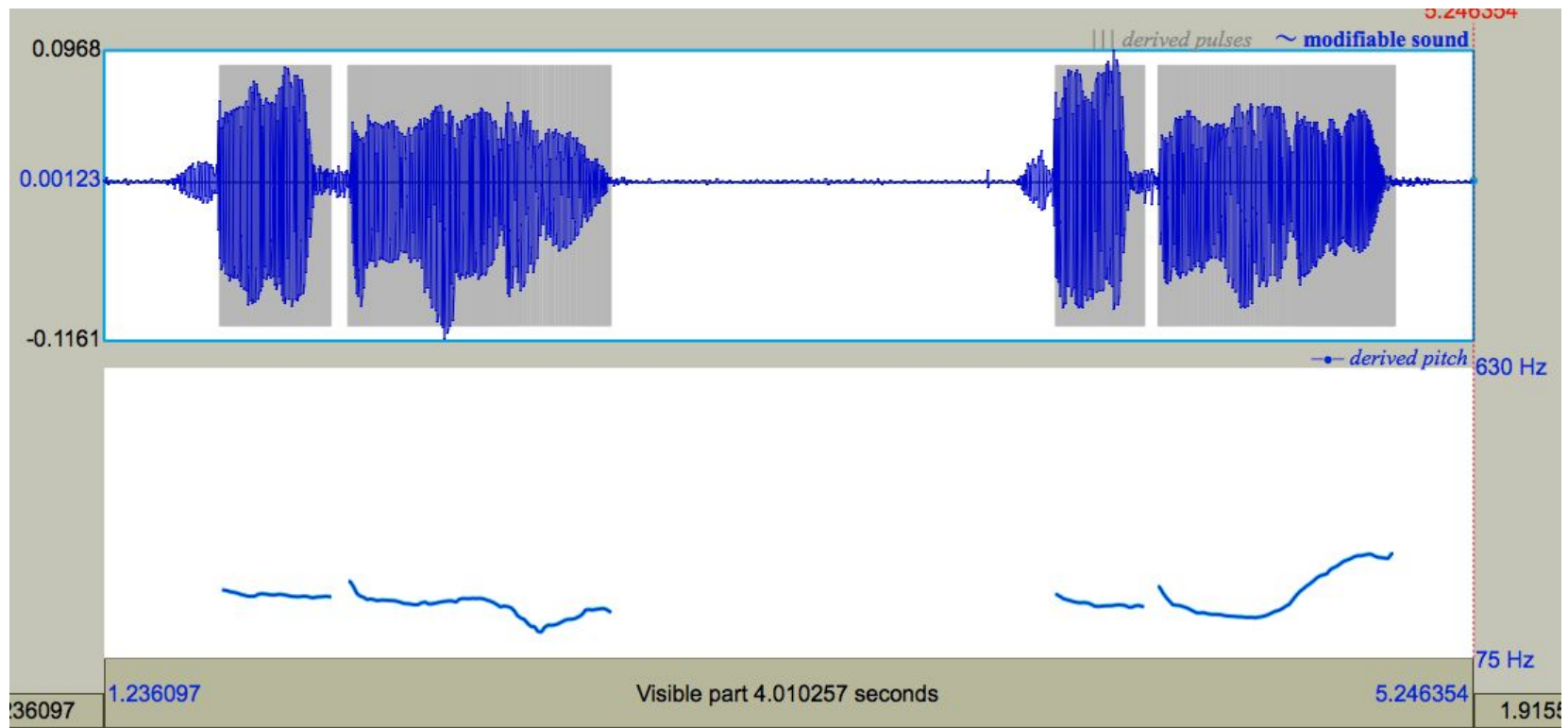
- Classical acoustic parameters
 - fundamental frequency (F0)
 - segmental duration
 - intensity
- Problems: each of these parameters
 - is also part of specification of speech sounds
 - supports several linguistic functions
 - also supports paralinguistic functions

Demonstration: Acoustic parameters of prosody

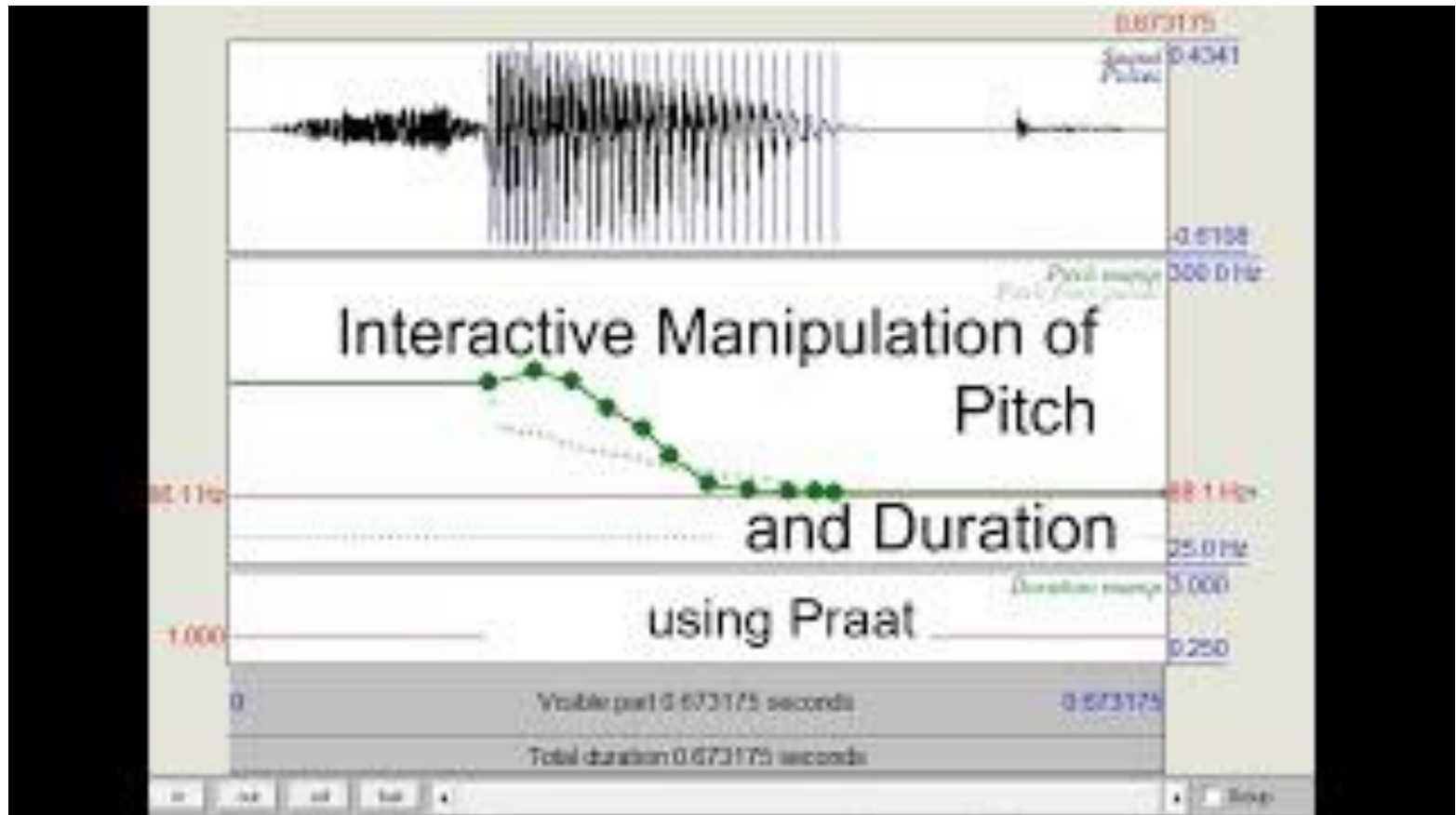
- in Praat, record and observe the intonation contour:

So you're from London

So you're from London?

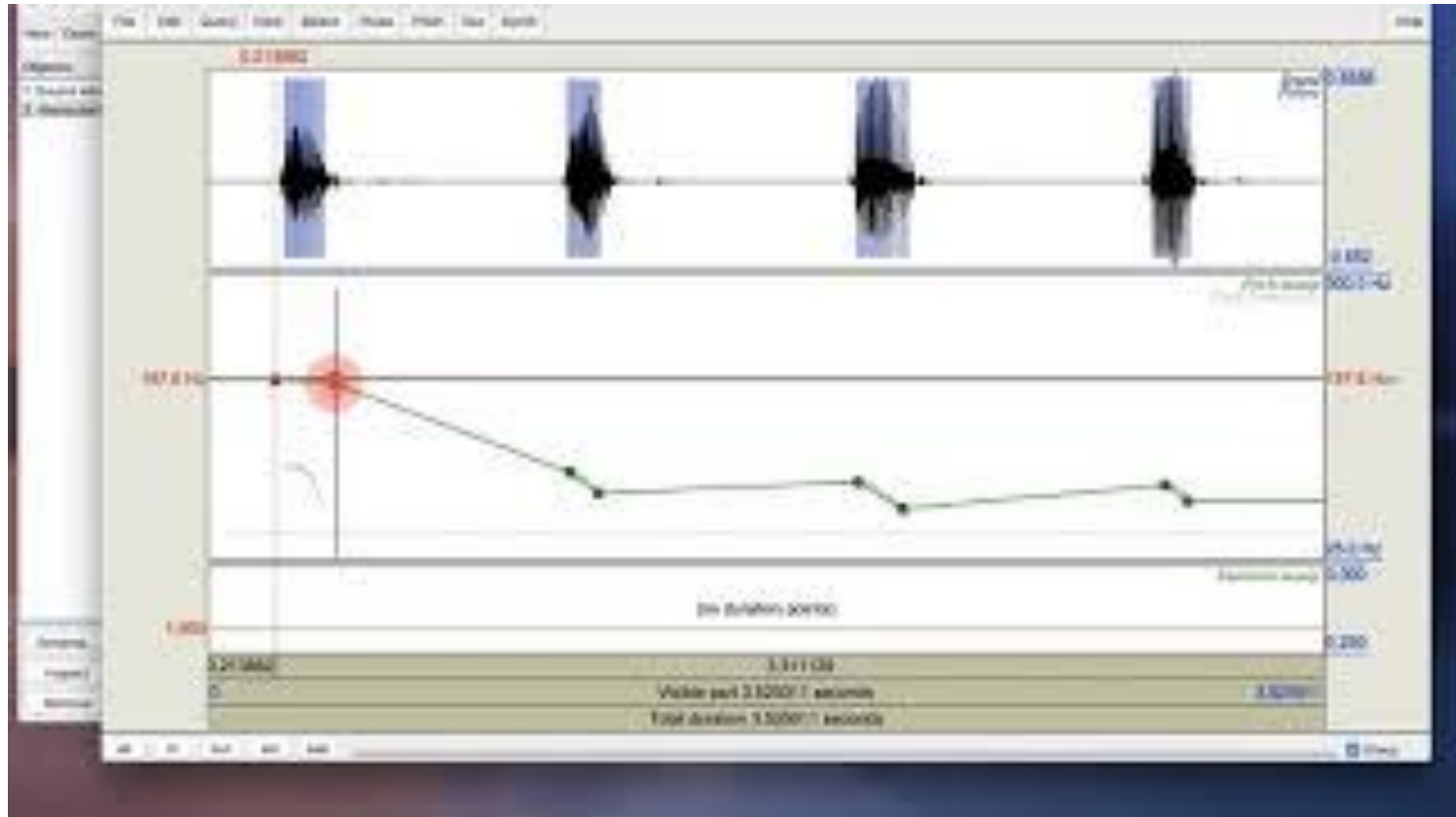


Resources: Pitch & Duration Manipulation



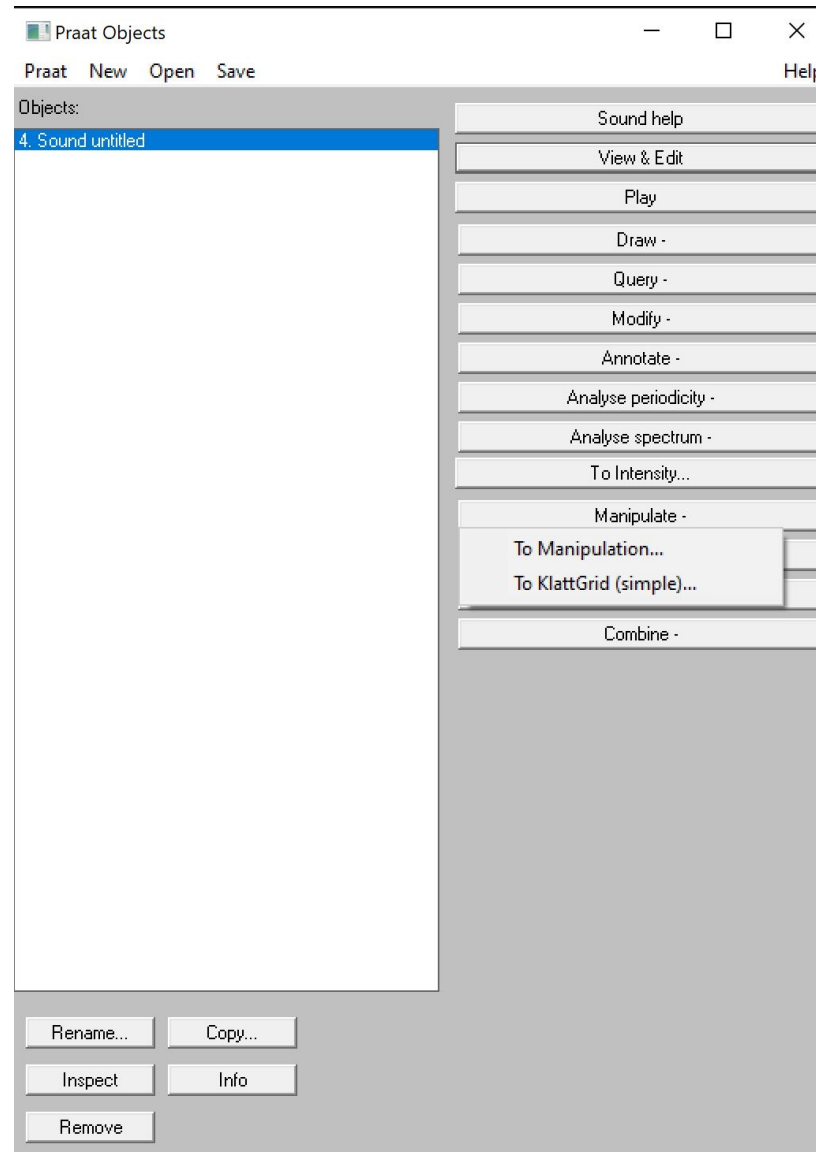
<https://www.youtube.com/watch?v=KjBsC24VtRA>

Resources: Pitch & Duration Manipulation



<https://www.youtube.com/watch?v=VNZISvzHHHk>

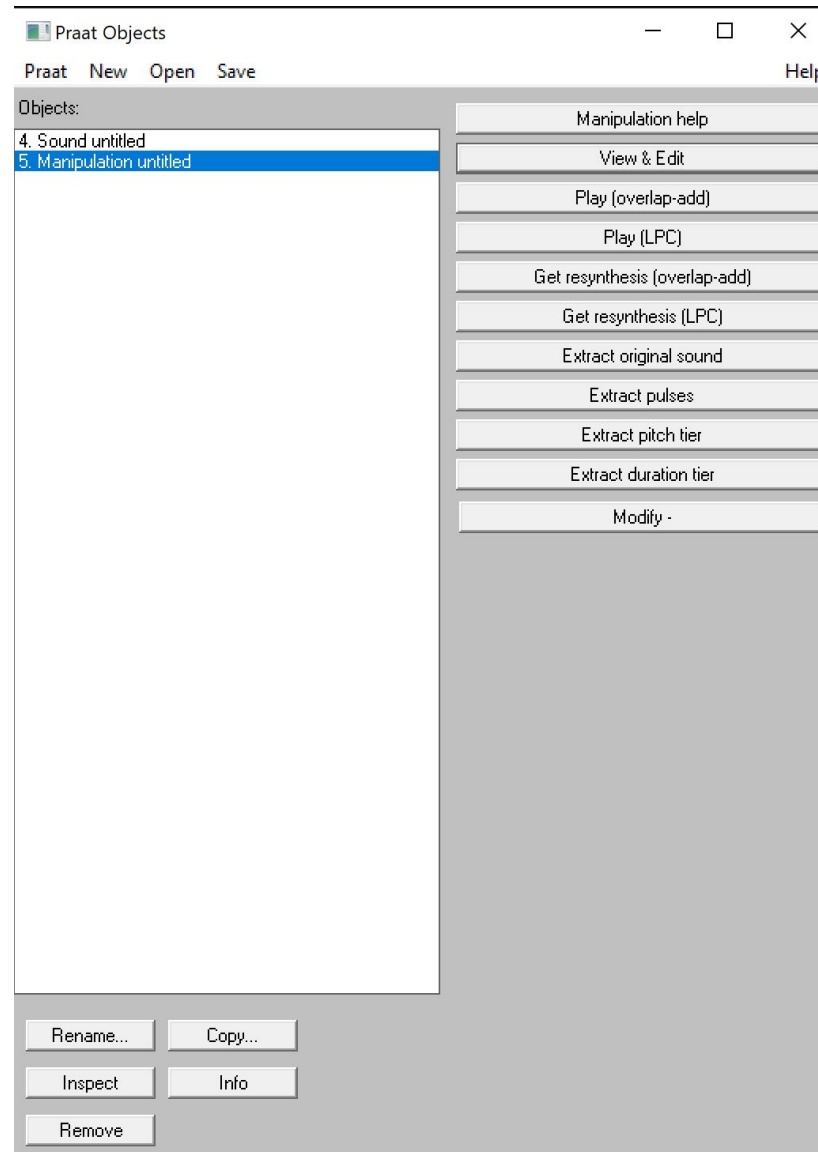
Demonstration – Manipulation of pitch and duration



Demonstration – Manipulation of pitch and duration

The screenshot displays the Praat software interface. At the top, the 'Praat Objects' window is visible with a menu bar containing 'Praat', 'New', 'Open', 'Save', and 'Help'. The 'Objects' list on the left contains one item: '4. Sound untitled'. To the right of this list is a vertical menu of actions: 'Sound help', 'View & Edit', 'Play', 'Draw -', 'Query -', 'Modify -', 'Annotate -', 'Analyse periodicity -', 'Analyse spectrum -', 'To Intensity...', 'Manipulate -', 'Convert -', 'Filter -', and 'Combine -'. The 'Manipulate -' option is selected, which has opened the 'Sound: To Manipulation' dialog box. This dialog box has a title bar with a close button (X) and contains three input fields: 'Time step (s):' with the value '0.01', 'Minimum pitch (Hz):' with the value '75.0', and 'Maximum pitch (Hz):' with the value '600.0'. Below these fields are five buttons: 'Help', 'Standards', 'Cancel', 'Apply', and 'OK'. At the bottom of the main Praat window, there are five more buttons: 'Rename...', 'Copy...', 'Inspect', 'Info', and 'Remove'.

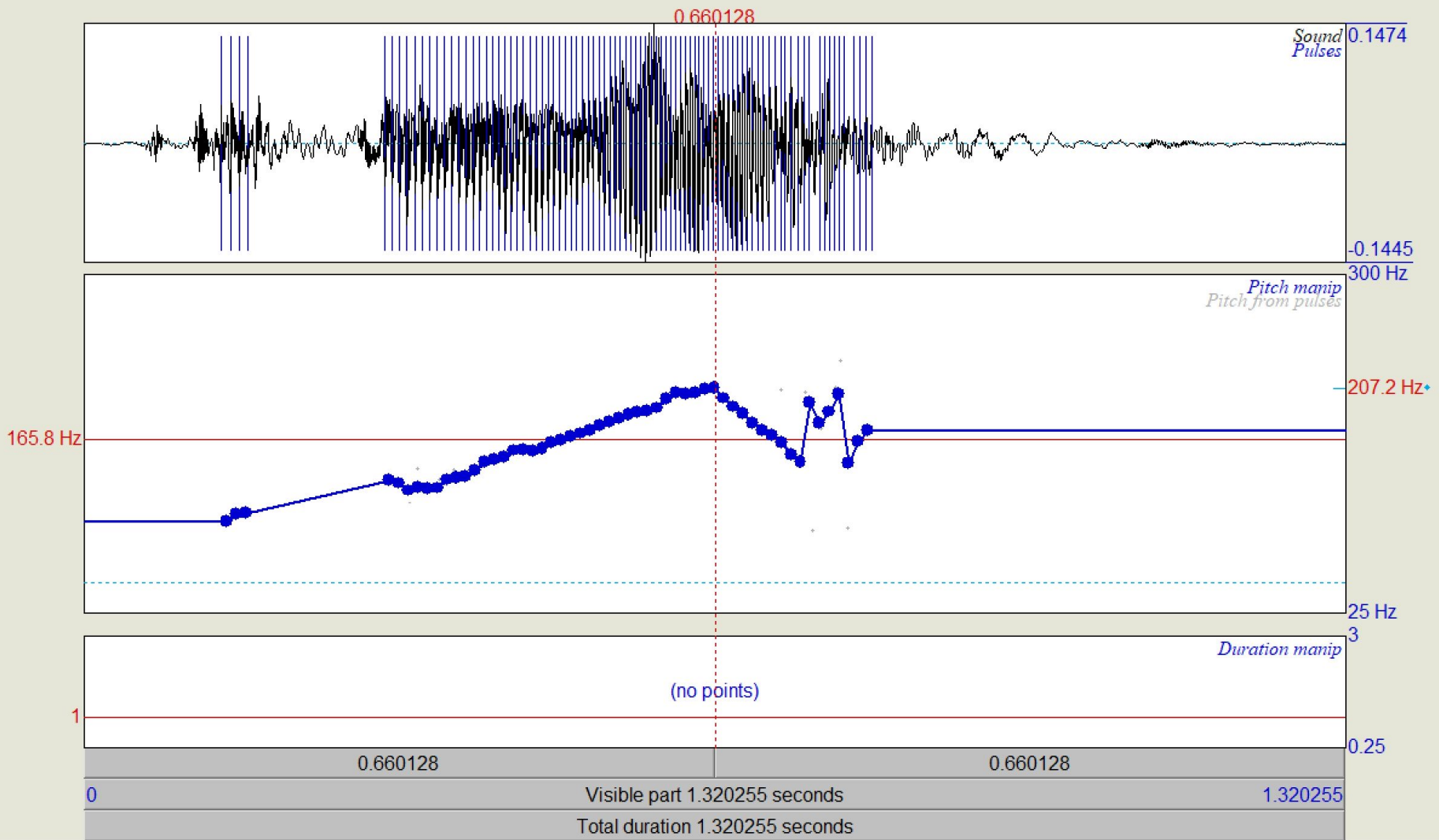
Demonstration – Manipulation of pitch and duration



Demonstration – Manipulation of pitch

5. Manipulation untitled

File Edit Query View Select Pulse Pitch Dur Synth Help



all in out sel bak

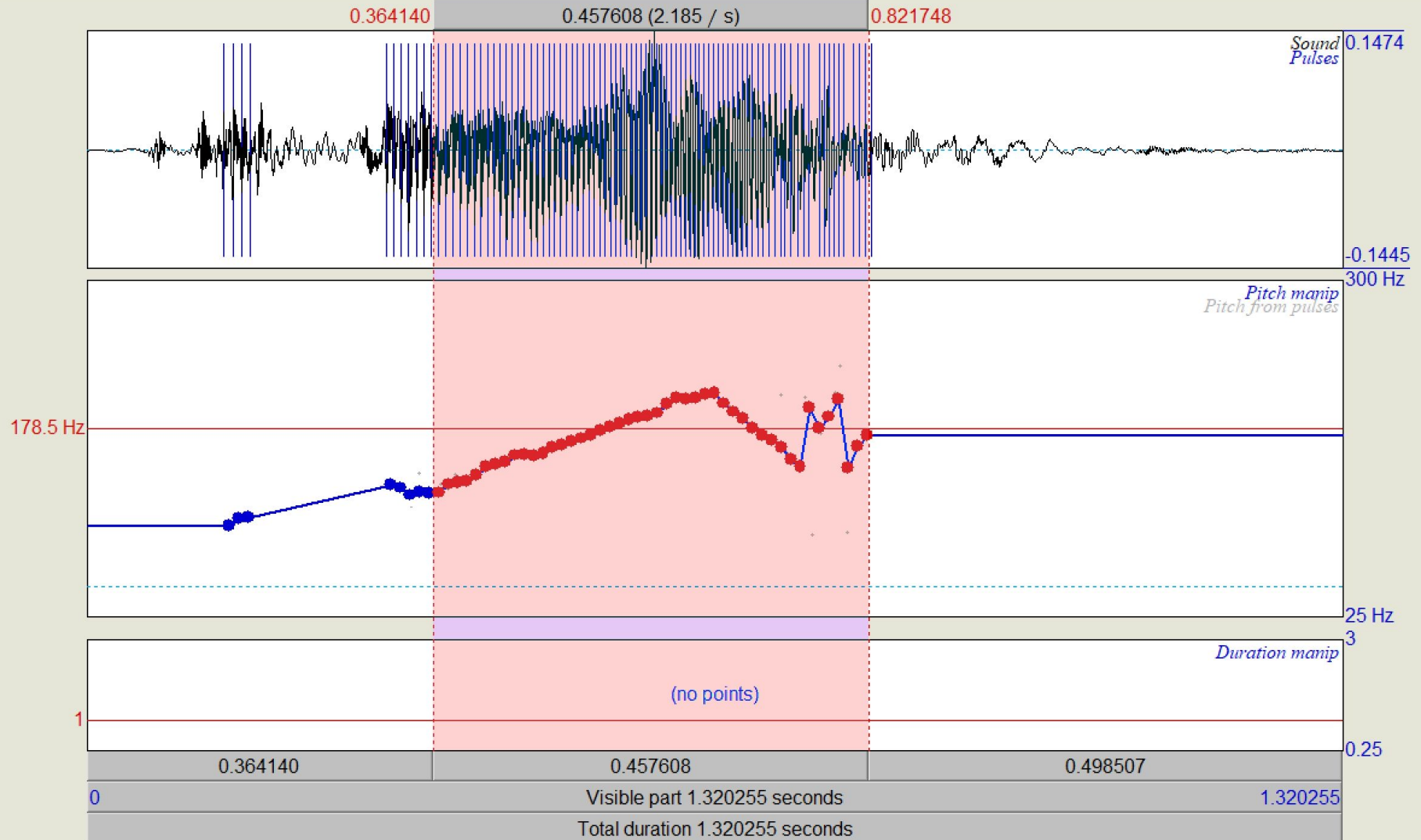


Demonstration – Manipulation of pitch

5. Manipulation untitled

File Edit Query View Select Pulse Pitch Dur Synth

– □ × Help



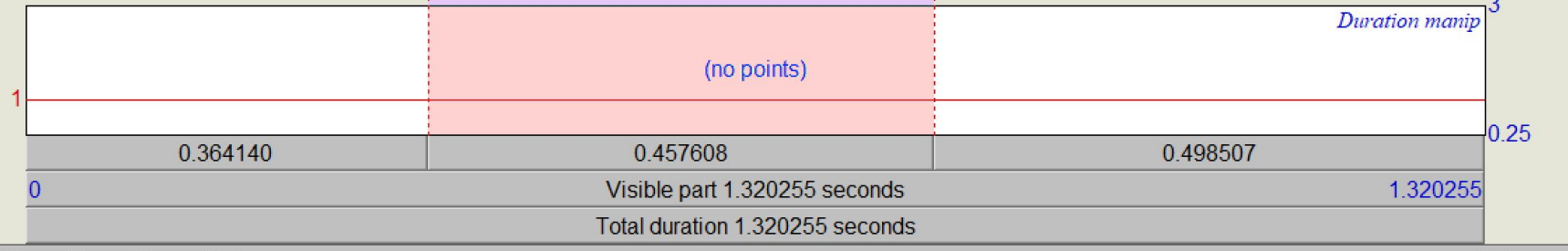
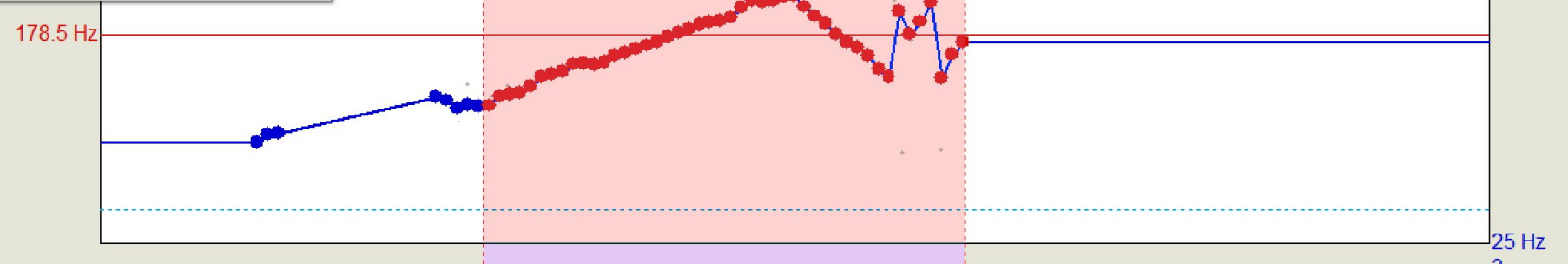
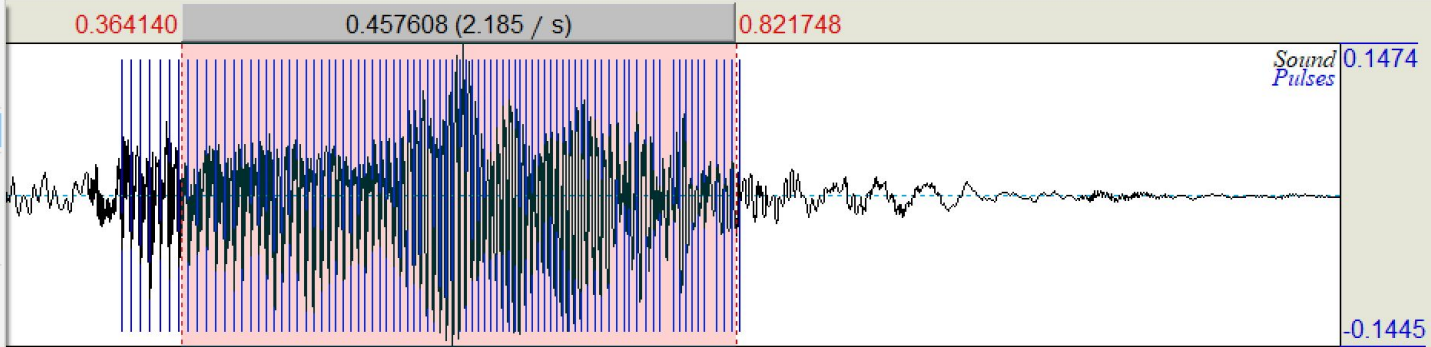
all in out sel bak

Demonstration – Manipulation of pitch

5. Manipulation untitled

File Edit Query View Select Pulse Pitch Dur Synth

- Add pitch point at cursor Ctrl-T
- Add pitch point at time slice
- Add pitch point at...
- Remove pitch point(s) Ctrl-Alt-T**
- Set pitch range...
- Set pitch units...
- Set pitch dragging strategy...
- All:
- Stylize pitch...
- Stylize pitch (2 st) Ctrl-2
- Interpolate quadratically...
- Interpolate quadratically (4 pts) Ctrl-4

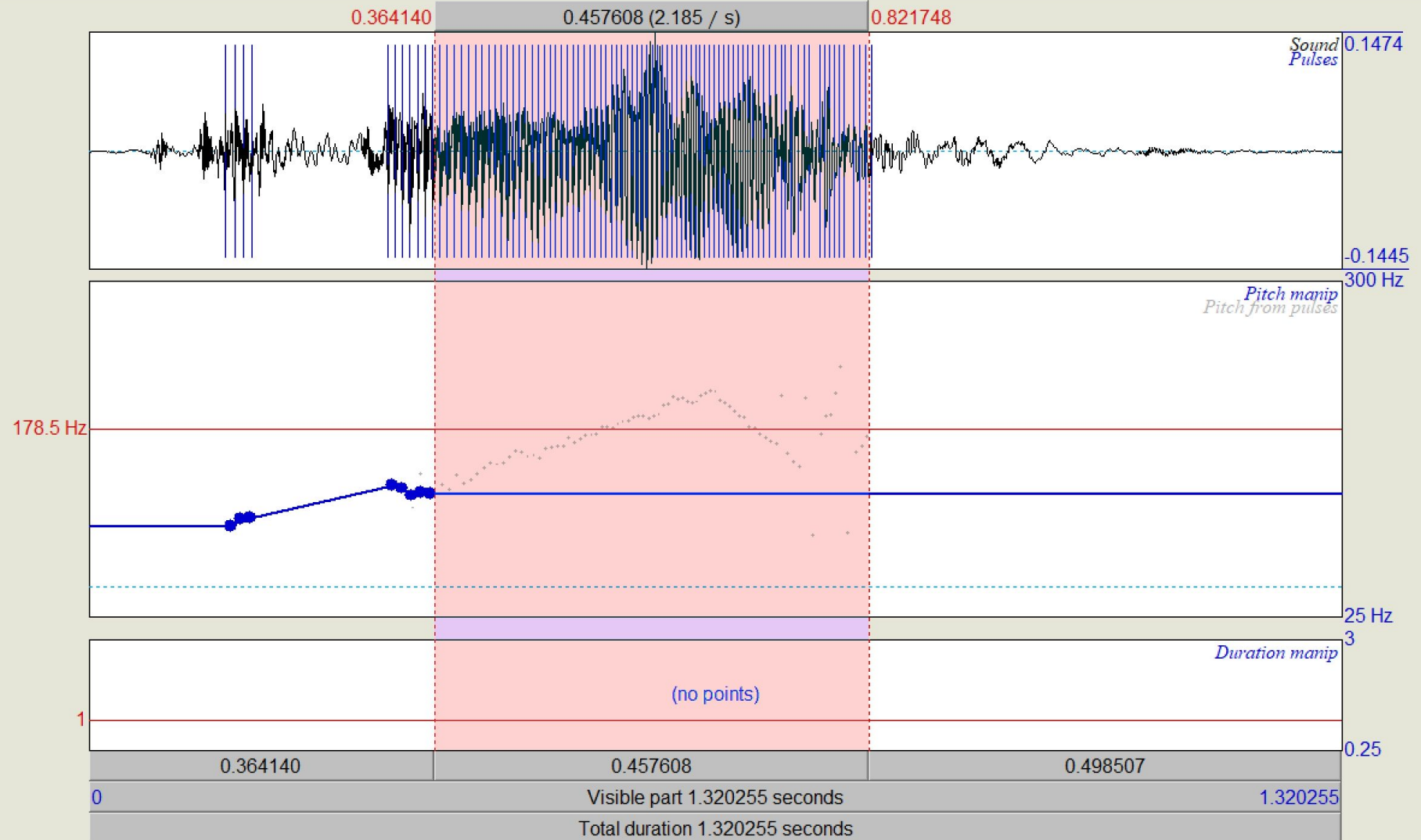


all in out sel bak

Demonstration – Manipulation of pitch

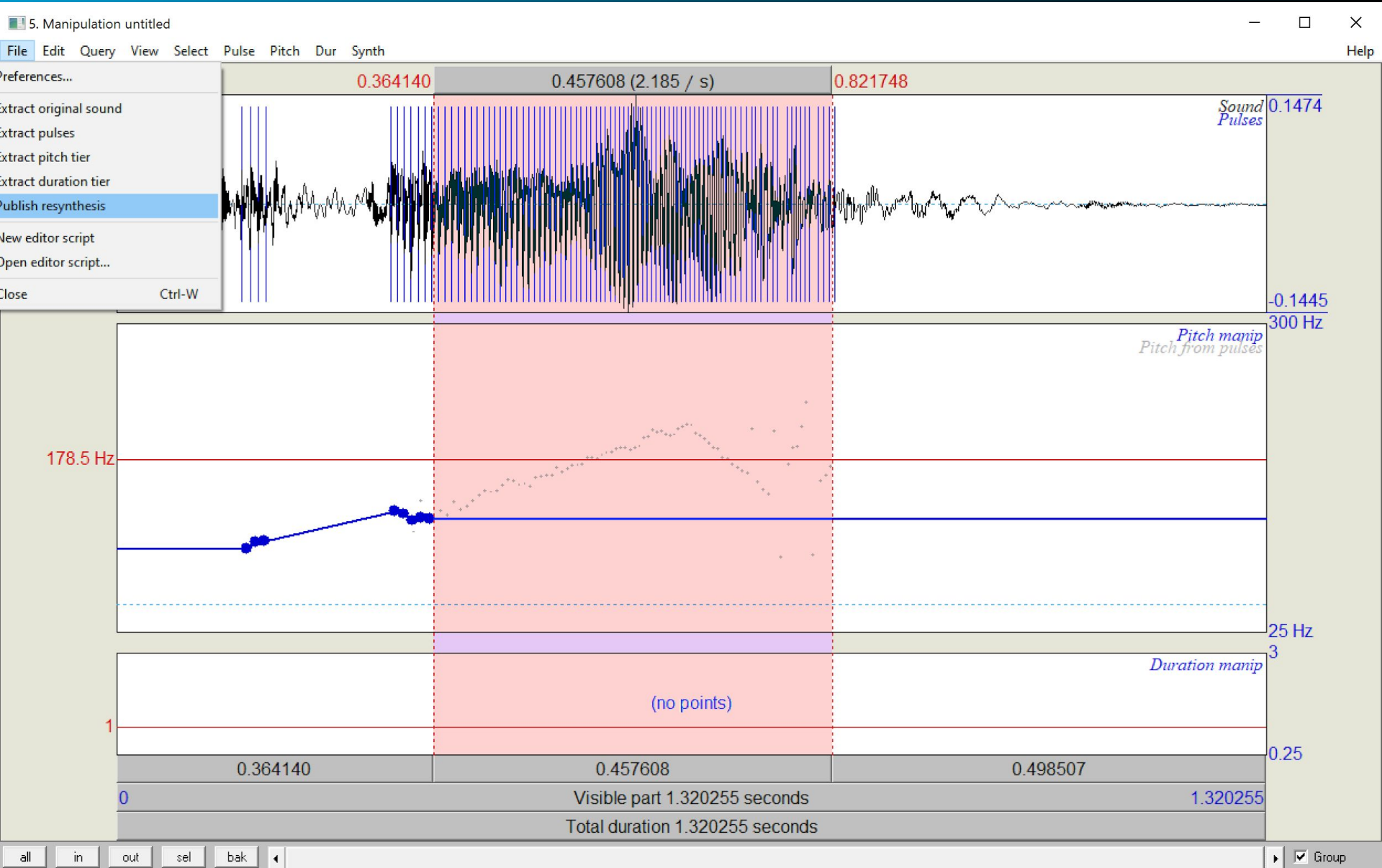
5. Manipulation untitled

File Edit Query View Select Pulse Pitch Dur Synth Help

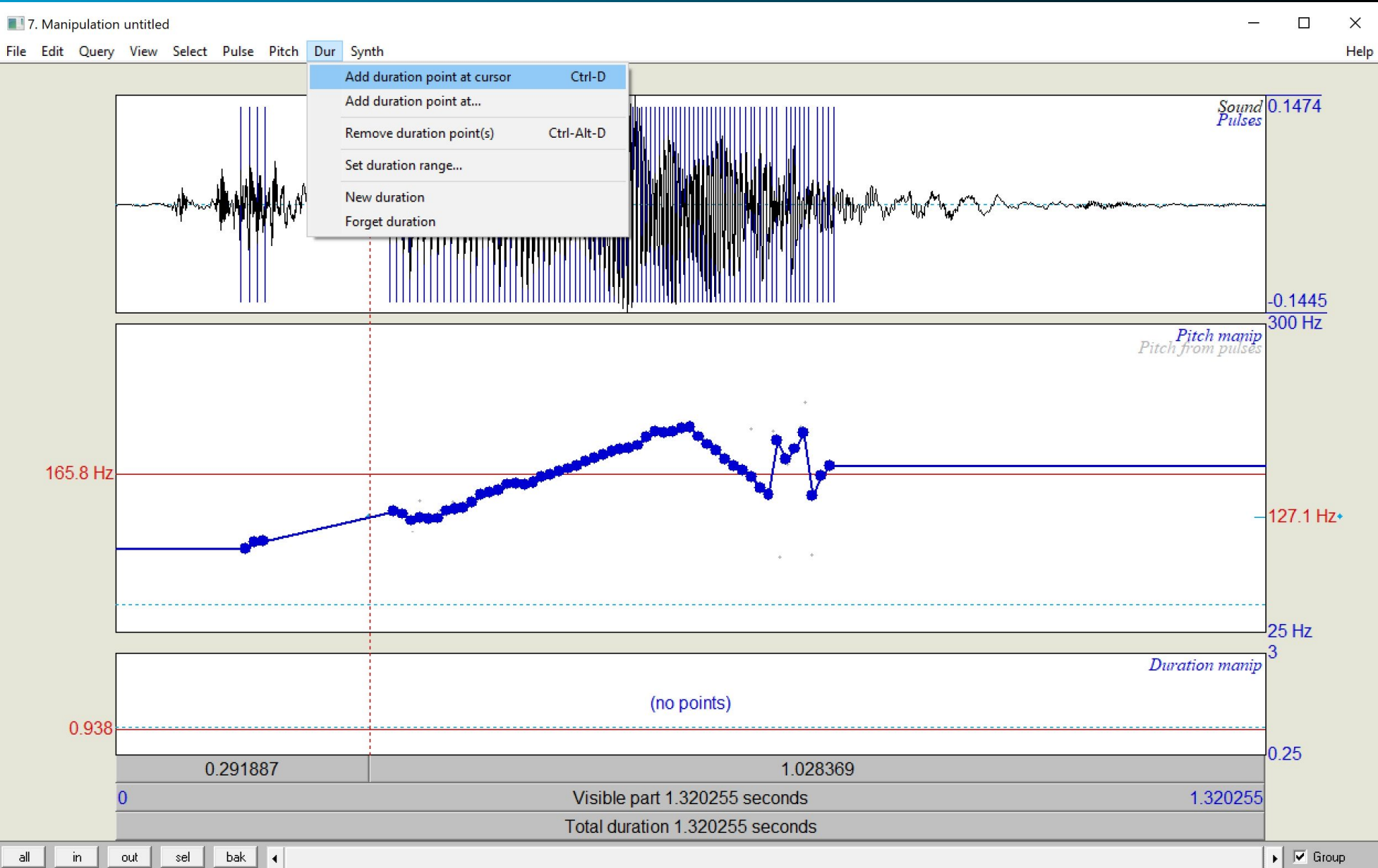


all in out sel bak

Demonstration – Manipulation of pitch



Demonstration – Manipulation of duration



Demonstration – Manipulation of duration

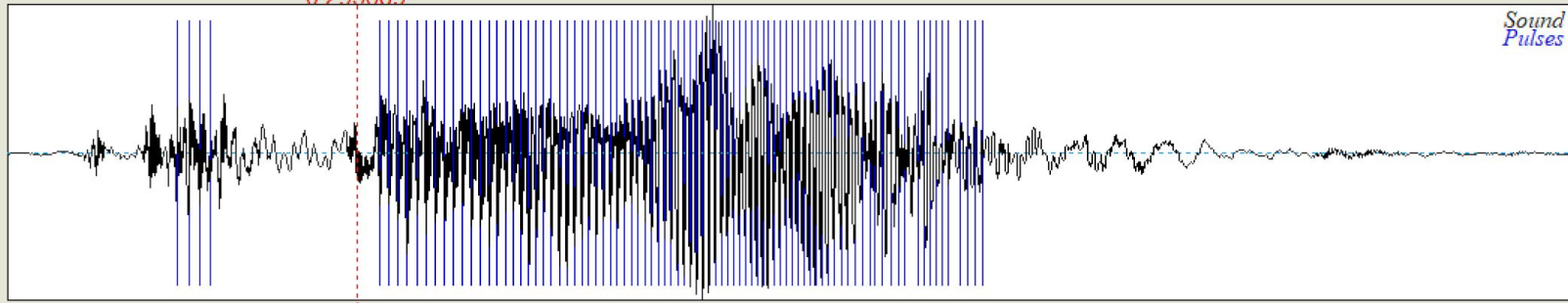
7. Manipulation untitled

File Edit Query View Select Pulse Pitch Dur Synth

— □ × Help

0.295689

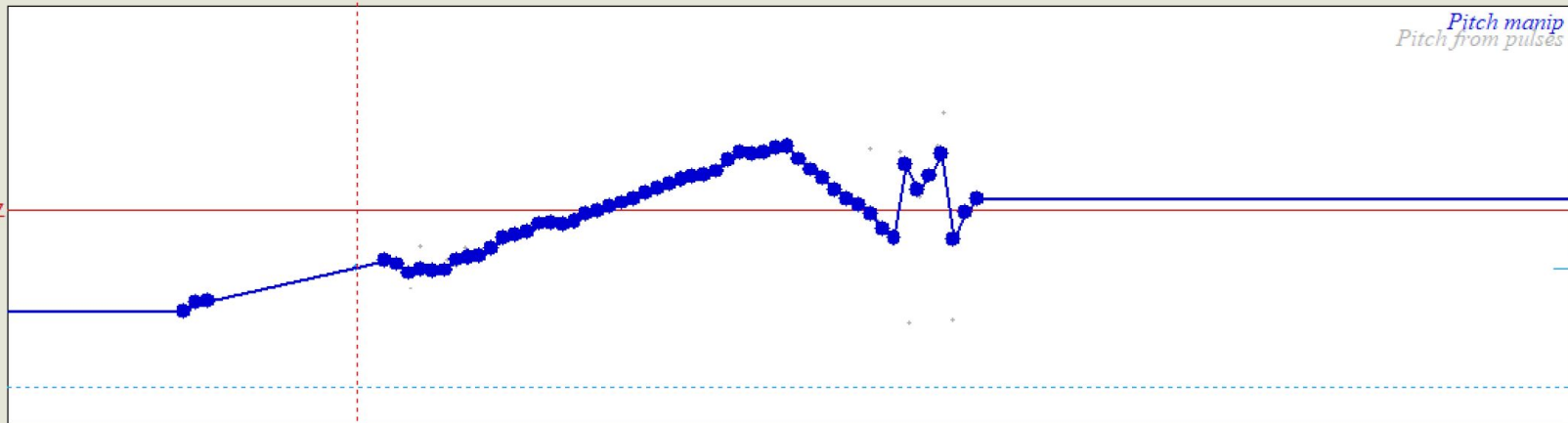
Sound Pulses 0.1474



-0.1445
300 Hz

Pitch manip
Pitch from pulses

165.8 Hz

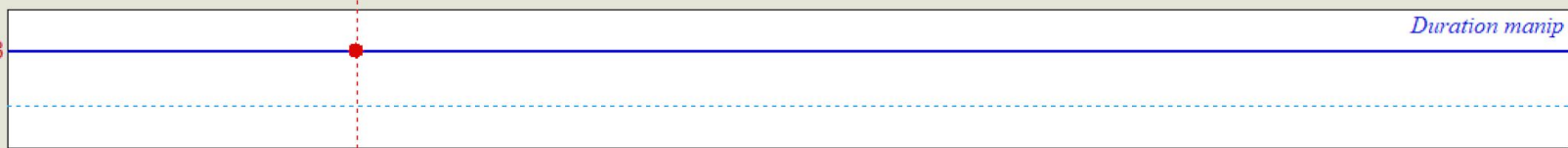


127.7 Hz

25 Hz

2.308

Duration manip



2.308

0

0.295689

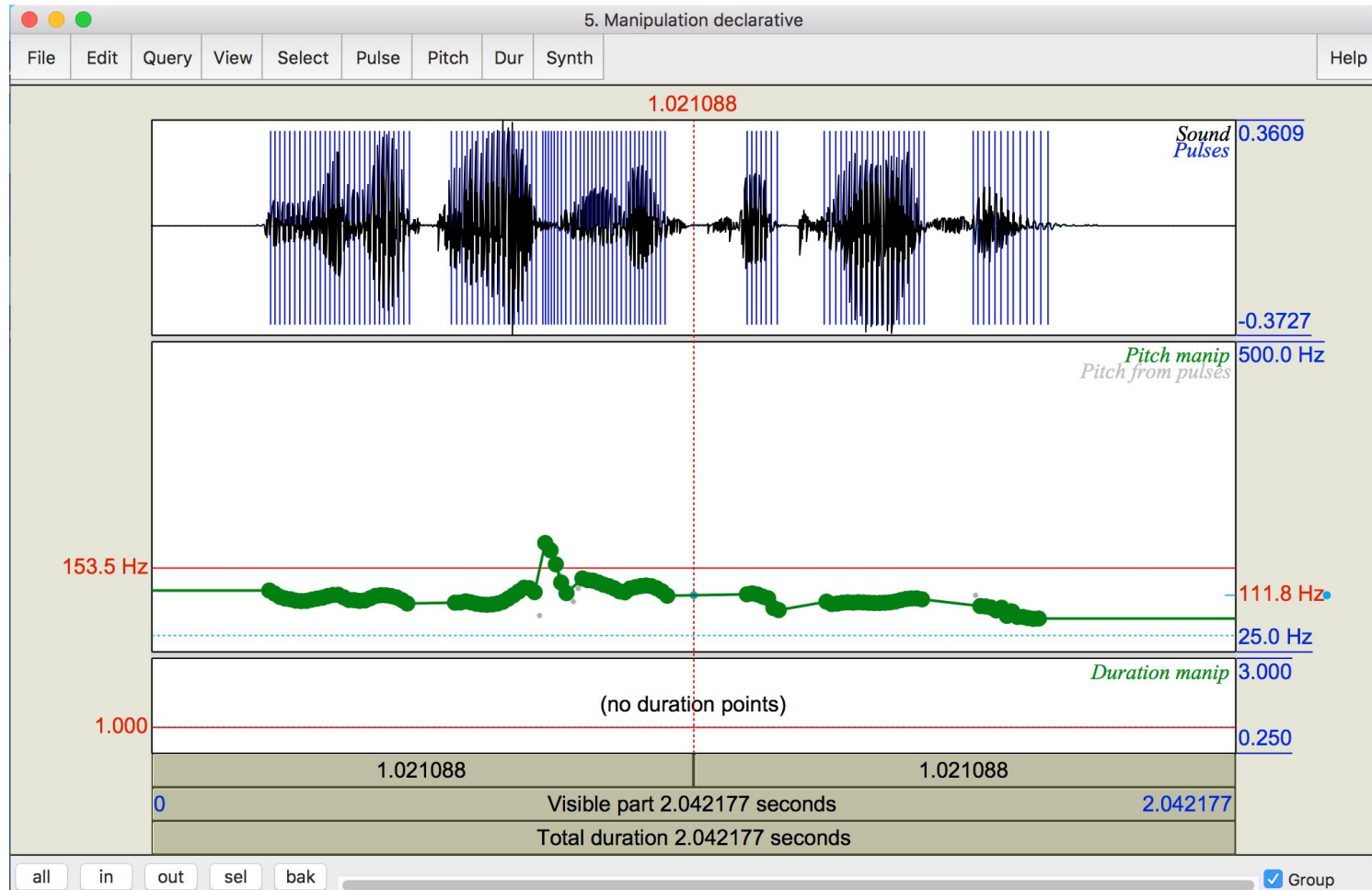
1.024566

0 Visible part 1.320255 seconds 1.320255

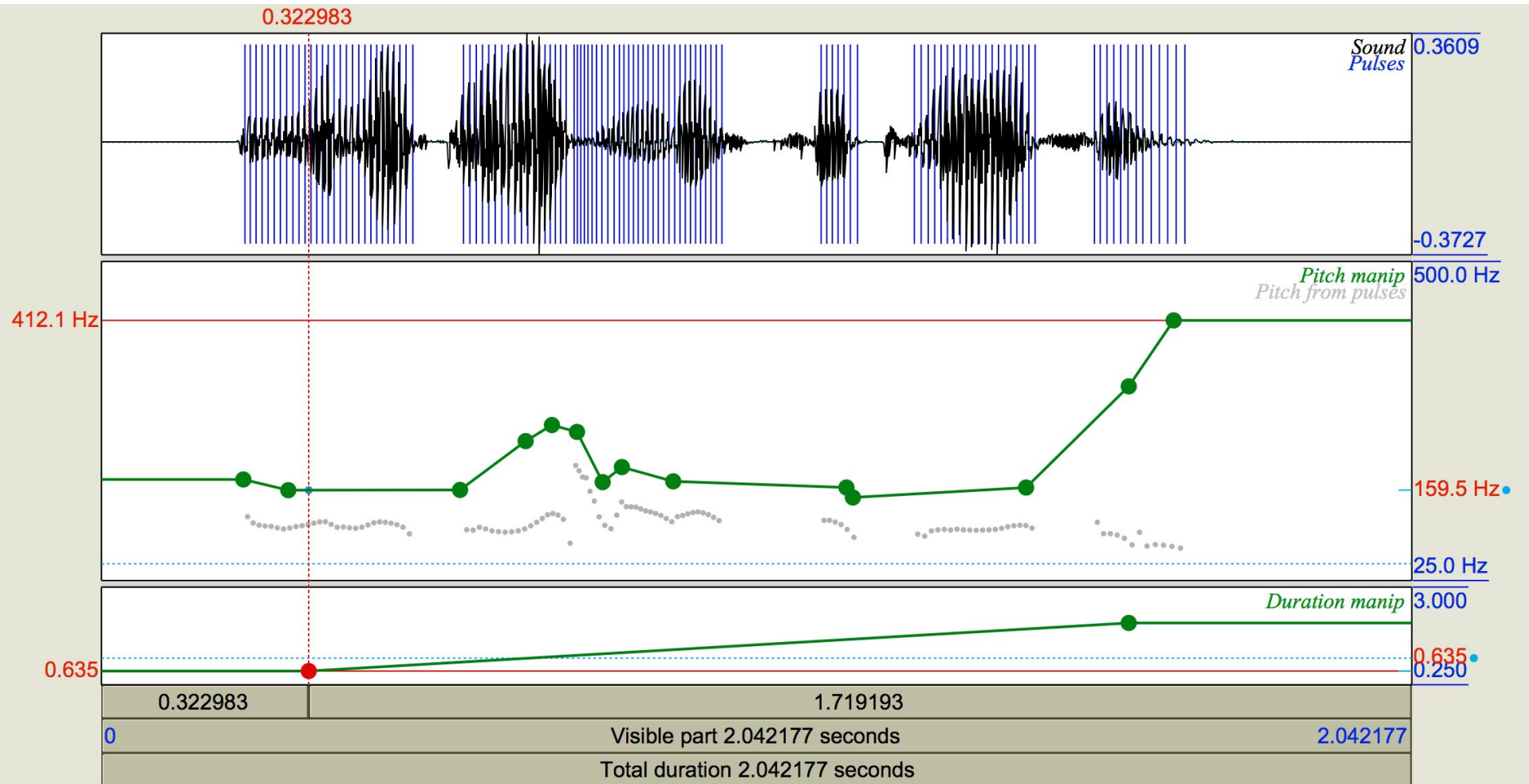
Total duration 1.320255 seconds



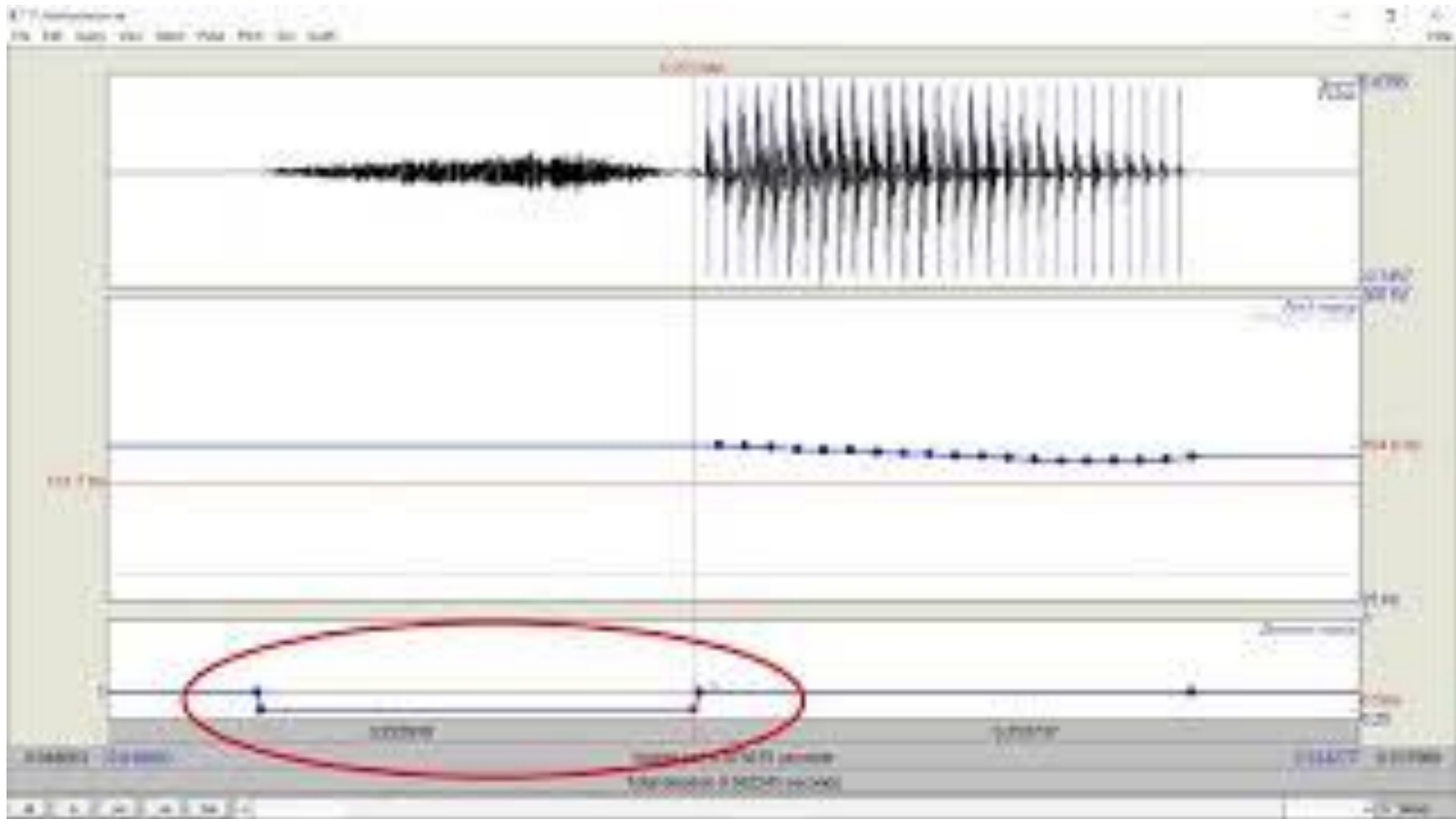
Demonstration – Manipulation of pitch and duration



Demonstration – Manipulation of pitch and duration



Resources: Duration Manipulation



<https://www.youtube.com/watch?v=ZFDwWVBWqeE>

Intensity Manipulation

The image displays the Audacity audio editing software interface. The main window shows a waveform of a signal with a selection box. The 'Effect' menu is open, and the 'Amplify' option is selected. The 'Amplify' dialog box is open in the foreground, showing the following settings:

- Amplification (dB): 28.696
- New Peak Amplitude (dB): 0.0
- Allow clipping
- Buttons: Manage, Preview, Cancel, OK, ?

Exercise: Pitch & Duration Manipulation

Instructions:

1. Record yourself saying some questions and statements
2. Manipulate the pitch to make your voice higher and lower
3. Manipulate the duration to speed up and slow down your speech
4. Manipulate the questions to sound like statements and vice versa using pitch manipulation

- So you're from London
- She's worked in a hotel before
- You went to Saarland University
- That's a coffee cake

So you're from London?
She's worked in a hotel before?
You went to Saarland University?
That's a coffee cake?