21M.380 Music and Technology
Sound Design

Lecture №11
Sound recording and editing techniques

Wednesday, March 9, 2016

A	B	C	D	E

Table 1. Groups

1 Group work: Script for an imaginary radio play scene

- As a group, write a short dialog (30 seconds max) with 2 or 3 sound effects for an imaginary radio play.

- Your assignment until next week will be to implement this scene by means of recording and editing (without Pd).

- You can use the following dialog as a model, but it doesn't have to be a phone conversation or a spy movie scene.

> spy 1: Picks up telephone *(sfx: Dialing tone from handset)*
> spy 1: Dials number *(sfx: Ringing tone from handset)*
> spy 2: "Hello, this is the Badger."
> spy 1: "This is Fox. The dog has the bone, the seagull flies tonight."
> spy 2: "Good, Fox. Now the Americans will pay for their deception… hold on…"
> *(sfx: click—telephone line goes dead)*
>
> (Farnell 2010, ch. 25)

2 Audio file formats

- Uncompressed

  - `.wav`
  - `.aif(f)`

- Lossless compression (reversible)

  - `.flac`
  - `.alac`

- Lossy compression (non-reversible)

  - `.mp3`
  - `.ogg`
  - `.m4a`
- Rules of 👍

  - Avoid re-encoding in lossy compressed formats
  - Use uncompressed formats during production whereever possible
  - Use lossy compression only for end user formats
  - Use `.flac` for archiving

3 Group work: Zoom H4n operation

1. Select FOLDER

   - Use wheel on right to navigate, click wheel to enter
   - 10 folders available, choose an empty folder

2. Change recording mode: MENU ≫ MODE

   - Recommended: STEREO

3. Set sample rate, bit depth, file format: WAV/MP3

   - Recommended: `.wav`, 44.1 kHz, 16 or 24 bit

4. Set levels and record.

   (a) REC
   (b) Select INPUT (internal MIC)
   (c) REC LEVEL
   (d) ▶
   (e) Record
   (f) Stop

5. Play recording

6. File transfer to computer: MENU ≫ USB ≫ Storage

4 Group work: Recording some example sounds

- Go out to record one characteristic sound (10 seconds max.) for later editing

- Should not be too quiet, ideally close-up recording without much background noise

- Could be one of the sounds you'll need for implementing the script from before

- Speech always works

5 Basic microphone and recording techniques

- Basic recording techniques

- Transducer type (dynamic vs. condenser vs. piezo)

- Polar pattern (omni, cardioid, fig-8)

- Basic stereo recording (XY, AB, ORTF)

6 Sound editing with Audacity

- Importing sound files: `File` 〉 `Import` 〉 `Audio…`

- Playback

  - Play/pause: Hit Play/Stop buttons or toggle with `Space` key
  - Loop selection: `⇧`+`Space`
  - Playback speed: Separate play button and slider for speed

- Navigate

  - Use navigate tool (hand) on top
  - Drag mouse in small waveform at bottom

- Zoom

  - `ctrl` + mouse wheel
  - Zoom tool, left-click to zoom in, right click to zoom out

- Spectrogram: Pull-down menu on track, `Spectrogram`

- Moving audio on timeline: with Time Shift Tool

- Copy, cut, paste: with Selection Tool and `ctrl`+`c`, `ctrl`+`x`, `ctrl`+`v`

- Splicing/cutting a clip: `Edit` 〉 `Clip Boundaries` 〉 `Split` or `ctrl`+`i`

- Joining two clips: Place cursor between clips and `Edit` 〉 `Clip Boundaries` 〉 `Join` or `ctrl`+`j`

- Fade in, fade out

  - Envelope tool
  - Or select region and `Effect` 〉 `Fade In|Out` (clumsy)

- Crossfades

  - Are way more complicated then they should be
  - http://manual.audacityteam.org/o/man/creating_a_crossfade.html

- Effects

- – EQing: Effect ⟩ Equalization
- – Stretching sounds at very long factors: Effect ⟩ Paulstretch
- – Reverb: Effect ⟩ Reverb

- Adding more tracks

  - – Tracks ⟩ Add New ⟩ Audio|Stereo Track
  - – Mono = 1 channel; Stereo = 2 channels

- Mixing

  - – Audacity mixes every input track onto the same stereo output bus
  - – Stereo tracks go
  - – Panning and balance (and difference between the two)

- Normalization and DC offset removal

  - – DC offset removal is crude (not a filter)

- Exporting sound files

  - – All tracks mixed together: File ⟩ Export Audio…
  - – Each track to individual file: File ⟩ Export Multiple…
  - – Selection (possibly cross-track): File ⟩ Export Selected Audio…

7   ED assignment

References and further reading

Farnell, Andy (2010). *Designing Sound*. Cambridge, MA and London: MIT Press. 688 pp. ISBN: 978-0-262-01441-0. MIT LIBRARY: 001782567. Hardcopy and electronic resource.

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