21m.380 · Music and Technology
Recording Techniques & Audio Production

Mixing assignment 2 (mx2)
Mixdown with reverb

Due: Wednesday, November 16, 2016, 9:30am
Submit to: Athena Course Locker
5% of total grade

1   Instructions

Create a complete mixdown from the individual tracks of a multi-track recording session, including artifical reverberation (and other effect plugins if required).

2   Guidelines

The audio files required for this assignment are provided for educational purposes[1] through Mike Senior's Multitrack Download Library.

[1]   http://www.cambridge-mt.com/ms-mtk-UsageFAQs.htm

1. Listen to the previews of the suggested pieces below and choose *one* you'd like to work on.

2. Download the `.zip` archive for your favorite piece, which contains the individual tracks in `.wav` format.

3. In your DAW (e.g., Reaper, Ardour, etc.), prepare the individual channels with EQs and compression and create a full mixdown of the entire piece,[2] including reverb.

4. The new element in this assignment will primarily be the inclusion of artificial reverberation (which you should incorporate no matter which piece of music you choose), and – to a lesser degree – any other effect plugins that might be required for the mix (which is not mandatory except where explicitly noted).

[2] Don't just do the 30-second excerpt that is available from the same site.

2.1   Source materials

2.1.1   Option 1: Asam Classical Soloists – *Jesu bleibet meine Freude* (J. S. Bach)

- Preview: http://www.previews.cambridge-mt.com/JesuJoy_Full_Preview.mp3

- Source material (5 tracks, 159 MB): `http://www.multitracks.cambridge-mt.com/AsamClassicalSoloists_JesuJoy_Full.zip`

- Background info: `http://discussion.cambridge-mt.com/showthread.php?tid=98`

- Forum discussion: `http://discussion.cambridge-mt.com/forumdisplay.php?fid=148`

- Note the M/S stereo mic signal included with this recording. You'll need to determine whether this is provided in encoded (M/S) or decoded (L/R) form. If you can't find any information online, do an aural A/B comparison between the M/S signal as it's provided and a decoded version of it (check the slides on how to do this in your DAW). One will probably provide a more convincing stereo image.

- This recording features two main stereo microphones in addition to three spot mics. It might be a good idea to delay the latter by comparison to the former, to compensate the runtimes between spot and main stereo mics.

2.1.2 Option 2: Big Stone Culture – *Fragile Thoughts*

- Preview: `http://www.previews.cambridge-mt.com/FragileThoughts_Full_Preview.mp3`

- Source material (7 tracks, 160 MB): `http://www.multitracks.cambridge-mt.com/BigStoneCulture_FragileThoughts_Full.zip`

- Forum discussion: `http://discussion.cambridge-mt.com/forumdisplay.php?fid=62`

2.1.3 Option 3: Hollow Ground – *Left Blind*

- Preview: `http://www.previews.cambridge-mt.com/LeftBlind_Full_Preview.mp3`

- Source material (16 tracks, 134 MB): `http://www.multitracks.cambridge-mt.com/HollowGround_LeftBlind_Full.zip`

- Background info: `http://discussion.cambridge-mt.com/showthread.php?tid=104`

- Forum discussion: `http://discussion.cambridge-mt.com/forumdisplay.php?fid=99`

- This track will definitely require some distortion on the cleanly recorded guitar – find a suitable plugin (for which you might have to look beyond the plugins that Reaper ships with).

2.1.4 Option 4: Leaf – *Come Around*

- Preview: `http://www.previews.cambridge-mt.com/0702_Remix.mp3`

- Source material (27 tracks, 155 MB): `http://www.multitracks.cambridge-mt.com/MR0702_Leaf_Full.zip`

- Background info: `http://discussion.cambridge-mt.com/showthread.php?tid=19`

- Sound on Sound article: `http://www.soundonsound.com/sos/feb07/articles/mixrescue_0207.htm`

- Forum discussion: `http://discussion.cambridge-mt.com/forumdisplay.php?fid=55`

2.1.5 Option 5: Man About A Dog – *Maggie May*

- Preview: `http://www.previews.cambridge-mt.com/MaggieMay_Full_Preview.mp3`

- Source material (15 tracks, 286 MB): `http://www.multitracks.cambridge-mt.com/ManAboutADog_MaggieMay_Full.zip`

- Forum discussion: `http://discussion.cambridge-mt.com/forumdisplay.php?fid=82`

2.1.6 Option 6: Jesper Buhl Trio – *What Is This Thing Called Love*

- Preview: `http://www.previews.cambridge-mt.com/0804_Remix.mp3`

- Source material (6 tracks, 332 MB): `http://www.multitracks.cambridge-mt.com/MR0804_JesperBuhlTrio_Full.zip`

- Background info: `http://discussion.cambridge-mt.com/showthread.php?tid=25`

- Sound on Sound article: `http://www.soundonsound.com/sos/apr08/articles/mixrescue_0408.htm`

- Forum discussion: `http://discussion.cambridge-mt.com/forumdisplay.php?fid=18`

2.1.7 Option 7: Arise – *Run Run Run*

There is extensive documentation available for this track. You are welcome and encouraged to use it for your work, but I'd rather you set up your own Reaper session than use the one available online.

- Preview: `http://www.previews.cambridge-mt.com/1111_Remix.mp3`

- Source material (22 tracks, 452 MB): `http://www.multitracks.cambridge-mt.com/MR1111_Arise_Full.zip`

- Background info: `http://discussion.cambridge-mt.com/showthread.php?tid=32`

- Sound on Sound article: `http://www.soundonsound.com/sos/nov11/articles/mix-rescue-1111.htm`

- Forum discussion: `http://discussion.cambridge-mt.com/forumdisplay.php?fid=60`

2.1.8 Option 8: Selwyn Jazz – *Much Too Much* (Bill Ashton)

There is extensive documentation available for this track. You are welcome and encouraged to use it for your work, but I'd rather you set up your own Reaper session than use the one available online.

- Preview: `http://www.previews.cambridge-mt.com/MuchTooMuch_Full_Preview.mp3`

- Source material (15 tracks, 516 MB): `http://www.multitracks.cambridge-mt.com/SelwynJazz_MuchTooMuch_Full.zip`

- Background info: `http://discussion.cambridge-mt.com/showthread.php?tid=570`

- Sound on Sound article: `http://www.soundonsound.com/sos/dec12/articles/session-notes-1212.htm`

- Forum discussion: `http://discussion.cambridge-mt.com/forumdisplay.php?fid=179`
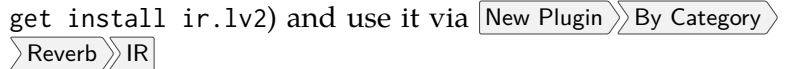
2.2 Workflow suggestion

1. Audition the available material.

   - Are all tracks useful?

- Which potential challenges are you facing (e.g., crosstalk from other instruments, clipping, inconsistent performance quality, etc.)?
- Can those tracks that are problematic be fixed, or is it better to leave them out?

2. Prepare the individual tracks (or stems, if needed).

- Work yourself up from the rhythm section to the soloists.
- Apply compression and EQs as appropriate.[3]
- Create stems (submixes) of instruments or instrument sections (e.g., drumkit) where necessary and appropriate.
- Check your tracks/stems for 'mixability' while you are working on them.

3. Set up a basic mix that is static and works throughout the piece.

- It's not too late to decide against the usage of individual tracks at this stage!
- Build a basic stereo image by panning each track/stem to an appropriate position.
- Set the fader levels of the individual tracks/stems. Do this with fresh ears! It shouldn't take long, but be prepared to go through several iterations of this process, with breaks in between.
- Bounce your basic mix and check it on different playback systems for potential problems. The drums will almost certainly be too loud, and the bass frequencies are likely going to be problematic. Identify these issues, compare with professional productions, and then go back to the drawing board if needed.

4. Apply artificial reverb to create a coherent room sound.[4]

- In Reaper, use either the *ReaVerb* or the *ReaVerbate* plugin.
  - FX ⟩ VST: ReaVerbate (Cockos)
  - FX ⟩ VST: ReaVerb (Cockos)
- If you are working on Ardour under Linux, install the `calf-plugins` package from the Ubuntu software center or from the terminal (`sudo apt-get install calf-plugins`) and use the *Calf Reverb* plugin: New Plugin ⟩ By Category ⟩ Reverb ⟩ Calf Reverb. Adventurous students can also try to find some freely available impulse responses online and get them to work with Tom

[3] Note that while compressors and EQs are ubiquitous in pop, rock, and jazz, they are much more sparingly used in classical music production – and often even avoided altogether. If your mix is in the latter genre, do try the effects of dynamic range processors and filters, but you should be prepared to apply them much more subtly than you would in other situations.

[4] Eargle (2003), Izhaki (2011), and Senior (2011a,b) are good resources to get started.

Szilagyi's convolution reverb. Install the `ir.lv2` package from the Ubuntu software center or from the terminal (`sudo apt-get install ir.lv2`) and use it via New Plugin ⟩ By Category ⟩ Reverb ⟩ IR

- If you are working on a different DAW, it is ok to use either, a traditional reverb or an impulse-response based reverb plugin.

- To keep things simple, you can start by applying a global reverb to the master output, but eventually you will achieve better results by reverberating the individual input channels separately. Trust your own ears and resist the temptation to rely exclusively on presets without customizing them.

- You might have to re-adjust your overall balance after this process.

5. Make your mix dynamic by means of parameter automation, but only where it is beneficial (put more emphasis on the reverb than on automation for this assignment). Focus on automating the following parameters (in order of importance):

   - Fader levels of input channels and master output

   - Panpot positions of input channels

   - Plugin parameters (e.g., filter cutoff frequency, compressor threshold, reverberation time)

6. Render your final mix to a single true stereo (2-channel) `.flac` file at 44.1 kHz and 24 bit.

7. Be sure to double-check your rendered mix for correct rendering regions, inclusion of all effects, correct file format and sample rate, etc.

3 Assessment criteria

Your final mix needs to demonstrate your familiarity with the following studio techniques:

- Setting up a stereo mix with appropriate level balance, stereo imagery, and (where beneficial) parameter automation

- Successful application of artificial reverb

- Proper rendering of the resulting mix as a production in its own right, including a well-chosen rendering region.[5]

[5] For example, do not leave mysterious silence at the beginning or end of your rendered mix and think about how much time should pass between the listener hitting the play button and the music starting to actually play.

In addition, any standards and good production practices set for our earlier editing and mixing assignments continue to apply, such as bouncing the mix to an appropriate output level and the correct file format etc.

The main criterion for a successful application of all the above techniques is, however, the overall musicality of your mix. With this assignment, we are taking our first step from a mere exercise to an actual full-scale production, so listen to your work with a musician's and a professional's ears.

3.1 Accompanying write-up

The purpose of the write-up is for me to have something to refer to whenever questions arise regarding the editing decisions you have made. Keep this document very concise (2–3 pages max.) and informative, and do not make it too verbose. This should really be a mixing, not a writing assignment.

Provide information on track selection, fader positions, panpot, compressor and EQ settings, etc. Embed screenshots into the document as you see fit. You do not need to list plugin settings in as much detail as for the ED2 and ED3 assignments, but do include a screenshot of your DAW's mixer that shows which plugins you have used on all input tracks.
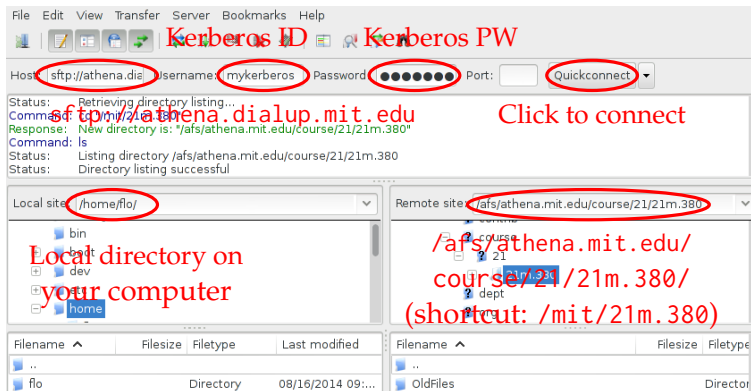
4 Submission format

FIGURE 1. Course locker access via Filezilla (free for Mac, Win, Linux)

This assignment is to be submitted via the Athena Course Locker rather than via Stellar.

1. Download an FTP client such as the free and cross-platform *Filezilla*.[6]

6 https://filezilla-project.org/download.php?show_all=1

2. Figure 1 shows how to connect to the course locker via Filezilla.

3. Drag-and-drop your files from your local drive to the following directory on the server: 🗀 afs ▸ athena.mit.edu ▸ course ▸ 21 ▸ 21m.380 ▸ mx2 ▸ YOUR-KERBEROS-ID
   where YOUR-KERBEROS-ID should be replaced with exactly that. Please do *not* delete the .htaccess.mit file in this directory.

Please do *not* pack your submission into a .zip or other archive format at this occasion. Instead, upload your audio file and write-up as individual files, which should be named as follows.

🗀 afs ▸ athena.mit.edu ▸ course ▸ 21 ▸ 21m.380 ▸ mx2 ▸ YOUR-KERBEROS-ID

├─ writeup.pdf (2–3 pages)

└─ mix.flac (stereo, 44.1 kHz, 24 bit)

References & useful resources

Eargle, John (2003). "Reverberation and signal delay." In: *Handbook of Recording Engineering*. 4th ed. New York: Springer. Chap. 16, pp. 232–41. MIT LIBRARY: 002277189. URL: http://link.springer.com.libproxy.mit.edu/content/pdf/10.1007/0-387-28471-0_16.pdf. Requires MIT library login.

Izhaki, Roey (2011). "Reverbs." In: *Mixing Audio. Concepts, Practices and Tools*. 2nd ed. Focal Press. Chap. 23, pp. 401–46. ISBN: 978-0240522227. MIT LIBRARY: 002302617. URL: http://libproxy.mit.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=454037&site=ehost-live&ebv=EB&ppid=pp_401 (visited on 11/22/2014). Requires MIT library login (max. 1 reader at a time).

Senior, Mike (2011a). "Mixing with delays." In: *Mixing Secrets for the Small Studio*. 1st ed. Focal Press. Chap. 17, pp. 255–60. ISBN: 978-0240815800. MIT LIBRARY: 002092991. Electronic resource. Accompanying information and sound examples: http://www.cambridge-mt.com/ms-ch17.htm.

— (2011b). "Mixing with reverb." In: *Mixing Secrets for the Small Studio*. 1st ed. Focal Press. Chap. 16, pp. 231–54. ISBN: 978-0240815800. MIT LIBRARY: 002092991. Electronic resource. Accompanying information and sound examples: http://www.cambridge-mt.com/ms-ch16.htm.

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