

HELPFUL TECHNICAL SETUP INFO!

Alex Shapiro's electroacoustic music-- in which the ensemble or soloist plays along with a pre-recorded audio track-- is composed with the intent of creating one seamless, sonic entity. The track is a significant, equal "section" in the ensemble, and should be played quite audibly— as loud as the ensemble.

The downloadable audio files include the accompaniment track in its stereo performance mix, and also in a mix for the conductor or soloist that includes a click track for in-ear monitoring. Often an additional audio file is offered that only has the click, to give the conductor the option of adding that track alongside the audio file containing both the accompaniment track and the click, for additional volume in the earbuds, or for using it by itself in rehearsal.

Electroacoustic pieces require either an audio system capable of playing the audio tracks from a laptop computer via a small digital audio interface connected to an audio mixer,

or,

A laptop to which USB headphones and an audio cable are connected (for use with multichannel files, explained below).

The use of an audio interface is greatly preferred, because it offers greater flexibility for volume levels and audio quality.

Rehearsal:

The rehearsal room will need a basic PA system, ideally with stereo speakers that can play loudly, placed facing the musician(s). For large ensembles, place another monitor in the back by the percussion section if possible, to ensure that everyone hears the same downbeats.

There is a stereo performance track which the musician(s) (and later, the audience) hears, as well as the stereo track that includes the click heard solely by the conductor or soloist through headphones or earbuds. If desired, one ear may be left uncovered, in order to clearly hear the live players against the track. The headphones or earbuds are plugged into an audio interface that goes between a laptop computer and an audio mixer.

Bonus!

Musicians can practice Alex Shapiro's pieces at home by downloading the accompanying audio track with the click. Please visit Ms. Shapiro's website, <http://www.alexshapiro.org>, to send an email requesting file access.

Performance:

Out to the audience: A stereo pair of speakers is placed on the far right and far left near the lip of the stage, to which the accompaniment track (**without** the click) is routed.

For the musicians: Stage monitors playing the accompaniment track (**without** the click) face the ensemble: on the left, on the right, and another placed at the back close to the percussionists. If possible, it is ideal for one or more of the percussionists to be set up with earbuds (with a clip to hold them securely in place!), so that they are in perfect sync with the conductor. The ensemble hears the live percussion more clearly than they hear the track, and that will effect the synchronization.

For the conductor: earbuds or headphones will play the accompaniment track with the click.

Technical setup: The ideal method:

Connect a laptop computer to a small digital audio interface, which in turn connects to an audio mixer. Open a simple multitrack digital audio application (see suggestions below), and load the accompaniment track **with** the click into one stereo channel routed **solely** to the headphones or ear bud worn by the conductor or soloist. Next, load the track **without** the click into two more stereo channels: one pair routed to the stage (and podium) monitors so that the musicians and conductor can hear the track (without the click), and another pair routed to the house speakers so that the audience can hear the track (without the click). The audio accompaniment track uses panning effects, so be sure that it's routed to the audience in stereo.

An additional stereo channel may be used to route an optional pair of stereo microphones placed over the ensemble. If the ensemble is mic'ed, it's best to have an engineer reading a music score to ride the faders at the mixing board and control the balance. Microphones would only be of consideration for very small ensembles, or for featured soloists.

SOFTWARE:

Audacity or Garage Band, or any multitrack sequencing application

HARDWARE:

USB audio interface (see below)

Miniplug or wireless headphones or earbuds with clips

FREE SOFTWARE SUGGESTIONS:

Audacity for download; a free digital audio editor

Open the application, and open a new window. Go to FILE in the menu bar, and then down to "Import," and then to "Audio...". A dialog box will appear from which you can navigate to the audio file you have downloaded. Do this for each track you wish to add to Audacity. Most of the time just two tracks will suffice: one for performance (without the click) that is routed to the house speakers for the audience to hear, and one with the track and the click mixed in, for the conductor's earbuds. But sometimes it's helpful to also load the audio file with only the click, so that the balance between the click and the track can be adjusted for the conductor's preference.

Garage Band: comes with Macs, and also available for PCs.

Open the application, and when given template options, select LOOPS for your new file. In the menu bar under TRACK, select NEW TRACK..., and REAL INSTRUMENT. Do this twice, once for the track with the click, and again for the track without the click. Drag each stereo file into its track.

After importing, ensure that the tracks are perfectly aligned! They are designed to automatically be in sync, with aligned start times, but it's always good to check.

PAID SOFTWARE SUGGESTIONS:

Reaper

AUDIO INTERFACE SUGGESTIONS: (the hardware between the laptop and the mixer, to route the tracks to the stage AND the house, and also route the earbud audio to the conductor):

Just about **any 4-channel I/O** (that's in/out) interface will work. Below are reliable companies, for which you can do an internet search by copying and pasting the model, to find the best prices:

Behringer: U-Phoria UMC404HD (about \$180)

MOTU: M4 4x4 USB-C Audio Interface (about \$220 at Sweetwater.com)

iConnectivity mioXM 4x4 USB-MIDI Network-MIDI Interface (about \$250 at Sweetwater.com)

EARBUD SUGGESTIONS:

Any earbuds or headphones will work. If using a wired pair, use as long a cable as possible and attach a clip to hold them in place in or around your ears! There is nothing more terrifying than having one or both earbuds pop out in the middle of a performance, and having to conductor free-style for the rest of a tightly synchronized piece!

In a perfect world, a wireless, single-ear summed stereo earbud, **with a clip to hold it in place**, is what a conductor would want— wireless (via a Bluetooth connection) offers the freedom of movement that being wired just cannot. Here are some VERY general links; it's best to do your own internet search. Click to see:

[Single summed stereo earbuds](#)

[Wireless headphones](#)

[Wireless setups for earbuds and headphones](#)

[You can also use a USB headset](#)

ALTERNATE METHOD using a multichannel file: The least expensive method:

Band director James DeCaro at St. Croix Preparatory Academy in Stillwater, Minnesota, wrote Alex with the following workaround suggestion using what's called a "multichannel" audio file, for ensembles lacking a full PA system. This requires a computer (a laptop is usually used); a free software application called VLC to play the downloadable multichannel aiff file; and a pair of USB or wireless headphones (they cost about \$40).

All multichannel files are available from Alex Shapiro at no charge. To obtain one, please email her at hello@alexshapiro.org.

SOFTWARE needed:

[VLC](#) (free media player, for all platforms)

HARDWARE needed:

USB or Bluetooth wireless headphones or earbuds

AUDIO FILE needed:

Multichannel AIF file (create your own quadraphonic file from the stereo click track and the stereo performance track (see specific instructions below), or email Alex Shapiro for the file at hello@alexshapiro.org).

Below are specific instructions for those with a Mac computer running Mac OS 10.4 or later, such as a MacBook laptop. All of this is equally doable on a PC.

1. Connect your USB headphones or audio interface to the computer (if using an audio interface, connect your headphones to the device's audio output).
2. Connect the computer to external speakers (via the headphone jack).
3. Open the application Audio MIDI Setup (found on the hard drive, in /Applications/Utilities).
4. Click the "+" at the bottom left of the Audio Devices window that appears, and choose "Create Aggregate Device". You can give your device a name (eg, "EA Band Piece Setup) by double clicking "Aggregate Device" and typing the desired name.

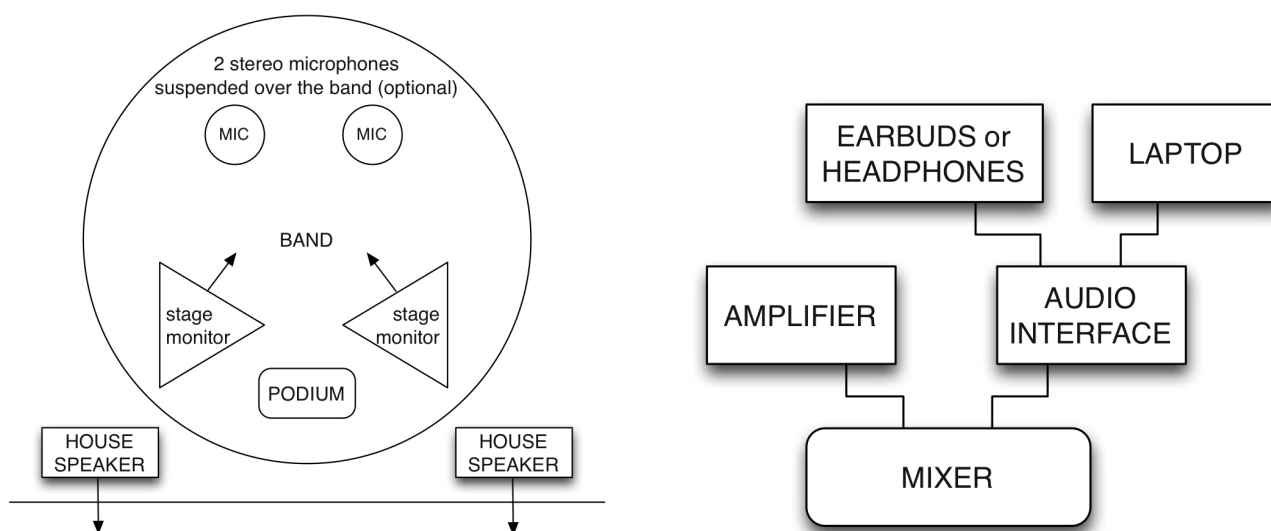
5. Click the checkbox next to “Built-in Output” first, and then your USB headphones (eg, “Logitech USB Headset”) or audio interface (eg, “iMic USB audio system”).
6. Click on “Configure Speakers...”
7. Select the two checkboxes at the top, click on the Multichannel button, and choose “Quadrophonic” from the pull-down menu. Click on Apply and then Done.
8. Open System Preferences/Sound and choose your aggregate device in the Output panel.
9. Open the multichannel AIF in VLC.
10. Press play. The click track and music should be in your headphones, and the music-only track should be on your external speakers.

Ohio Band director Aaron Given offered up this helpful tip, for anyone having problems:

It turns out that Audacity does not have the ability to map specific tracks to specific buses in the audio interface. Because of this, all of the audio was getting routed through one output, no matter how many tracks I made or lines I tried to hook up to the Gear. I downloaded a copy of Cakewalk by BandLab, which is also free but much more powerful than Audacity. Now I can assign the main track to outputs 1/2 and the click to outputs 3/4. No mixer required, though I can see how it would be useful.

Note: you CAN use Audacity for playback if the laptop is connected to a digital audio interface that routes the individual stereo (not multichannel) files *through* different channels on a mixing board (i.e., the track that the audience hears on one channel, and the track with the click that the conductor or performer hears, on a separate channel).

Please note that none of the manufacturer or retailer suggestions in this document involve a professional endorsement from Alex Shapiro or Activist Music. They are simply offered as helpful guides. And: please contact Alex with your own helpful solutions! We are all expanding this musical performance genre together!



Monitors, speakers, laptop, audio interface, and microphones, if desired (not needed), are connected by cables to the mixer, which is usually centrally placed in the back of the auditorium, or otherwise, on the side of the stage. It's helpful to also have one or two stage monitors at the rear of the stage, so that the percussionists can clearly hear the pulse of the track.

Need to create your own multichannel audio file?

In Audacity/Preferences, choose Import / Export from the list at the left, then choose — depending on your version of Audacity— the “Use custom mix” radio button, or the “Use Advanced Mixing Options” button. In a new Audacity window, **import the performance track (without the click) FIRST**— the order is important. Simply go to FILE in the menu bar, and then down to “Import,” and then over to “Audio...”. A dialog box will appear from which you can navigate to the audio file you have downloaded that you want to play from Audacity. **Next, import the click track the same way.**

Then, select both tracks (Command-A on a Mac), click the FILE menu, and choose, “Export Selected Audio...”. A dialog box will pop up, allowing you to give your file a new name (like, TITLE_MULTICHANNEL), and designate where you want to save the new file, as well as a file type. Select .WAV, because it can be easily read by both Mac and PC platforms, and retains the highest audio quality. Do **not** select MP3, because that is a compressed file that will not sound as good. Once you click OK, you’ll see a routing diagram of four output channels: click, OK. Depending on your preferences, you may then see one last window containing the metadata (copyright information) for the audio file; edit as needed, and click OK.

Please note: “Multichannel” means, in this case, more than 2 tracks. You cannot use Audacity or iTunes to play a multichannel file back during performance. The application **VLC** (for all platforms) will work well.

Again, for clarity: you CAN use Audacity for playback if the laptop is connected to a digital audio interface that routes the individual stereo (not multichannel) files through different channels on a mixing board (i.e., the track that the audience hears on one channel, and the track with the click that the conductor or performer hears, on a separate channel).

For more info about creating multichannel files in Audacity:

https://manual.audacityteam.org/man/advanced_mixing_options.html

IF YOU WANT TO MAKE A RECORDING OF A SHAPIRO ELECTROACOUSTIC PIECE FOR A “VIRTUAL” PERFORMANCE ON YOUTUBE, ETC:

First, of course, please obtain permission from Alex Shapiro by sending her a nice email. You will need her publishing company, Activist Music LLC, to grant you a synchronization license. In most cases this will not cost you anything.

Ms. Shapiro requests to see, and possibly make recommendations on, the final product before you post it for your concert recording/performance. In most cases this just has to do with the mix: getting the balance of instruments right and ensuring that the track is loud enough.

If you are an educator, you’re welcome to share the digital parts with your students, but please only give them access to the track that has the click, for copyright reasons.

IF YOU WANT TO MAKE A RECORDING OF A SHAPIRO ELECTROACOUSTIC PIECE TO RELEASE COMMERCIALY:

First, of course, please obtain permission from Alex Shapiro by sending her a nice email. You will need her publishing company, Activist Music LLC, to grant you a mechanical license. In most cases this will not cost you anything.

Then: it's VERY VERY **VERY** important to understand that a proper recording cannot be made if the audio accompaniment track is playing over the speakers at the same time as the ensemble is playing (i.e., during a live concert performance).

The **ONLY** correct way to record an electroacoustic piece is for the soloist or conductor to have the accompaniment track (with click, most often) playing only in their earbuds or headphones, while the live instrumentalists perform without hearing the track over any monitors. There are many compelling reasons for the importance of adhering to this, but a few are:

If both the live and the recorded elements are captured on the same microphones in a session, there is NO WAY to make any meaningful adjustments after the fact. Any professional recording, even one that's purely acoustic, requires a good amount of "tender loving care" in post production to ensure that the musicians sound as wonderful as possible, and to protect the integrity of the piece as the composer envisioned it. To wit:

Should the ensemble fall out of sync from the accompaniment track at any point during the the recording, the only way to fix this is for the musicians to have been recorded separately.

The only way to achieve the ideal volume balance between the musicians and the accompaniment track, is for the musicians to have been recorded separately.

The only way to achieve the ideal frequency balance (equalization and other techniques) between the musicians and the accompaniment track, is for the musicians to have been recorded separately.

Please contact Alex Shapiro with additional questions, or corrections to this guide, or suggestions for helpful additions to it, at hello@alexshapiro.org.

And most of all: Thank you for playing this music!