



Technology in the Practice Room

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 - a. Creating rehearsal click tracks in notation software
 - b. ClickDesigner

- II. **The Virtual Ensemble**
 - a. Rehearsing with a Sibelius / Finale Score
 - i. Front Ensemble can practice listening to the winds and battery while marchers learn drill. More effective use of rehearsal time.
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- V. **Useful Software**
 - a. Digital Downbeat Apps: ClickDesigner / TuningFork / SongMarker / Sample Player
 - b. Other Apps: Tonal Energy Tuner / iRealBook / MalletVoice LITE
 - c. FREE Software: GarageBand (Mac pre-installed), Audacity (Mac / Win), Chainer (Win), Sony Acid Xpress (Win), Finale Notepad (Mac / Win), Ableton Live Demo / Other software demos (Mac / Win)



EXERCISES FOR USE WITH DELAY:

#1) Practice syncopations using "stacking".

Description: The recurrence of sound in the delay allows the player to listen for subtle nuances in timing of syncopated rhythms.

Instructions: Look at the page in this handout entitled "Getting Started". Here are several examples of progressive difficulty that demonstrate how to "stack" syncopated rhythms in the delay to listen and perfect your timing. Loop one measure of this several times, focusing your mind on consistently placing the note at the correct subdivision of the beat.

#2) Practice maintaining a steady pitch.

Description: A virtual ensemble experience is created when a player is forced to perform with their own sound in the delay. This is extremely useful for practicing intonation on a single note, as "beats" will occur if there is any variance in pitch by the player.

Instructions: Set the delay to a longer duration (perhaps a second or longer). Practice a scale, such as the chromatic scale, by holding each pitch in the delay. First, intentionally bend the pitch sharp and flat and listen to what it sounds like when you are sharp and flat with the "ensemble". Then, practice bringing the pitch back in tune and listen to maintaining a smooth pitch without any "beats" or pulses in the sound.

#3) Practice tuning intervals and chords.

Description: Learning how to adjust a pitch to achieve "just" intonation is critical. Within the "virtual delay ensemble", one can practice tuning intervals and chords by "stacking" in much the same way that we practiced timing in exercise #1. This is a great mouthpiece-only exercise for brass players!

Instructions: Set the delay to an appropriate amount for how you want to practice. Holding long chords will require longer delay times and longer feedback times, practicing scale passages or arpeggios may work better with shorter delay times. First, you need to set a "drone" by playing a long note on the tonic (or root). Then, move immediately to an interval, such as the fifth. In order to achieve "just" intonation, you must play the fifth a little higher than an equal-tempered fifth. Listen for the "beats" to slow and eventually smooth out. Go back to the root. Once the drone is re-established, move to the major third above it. This will have to be brought down in order to achieve "just" intonation. Once again, listen for a smooth sound with the absence of beats. This concept can easily be extended to chords by playing multiple pitches before returning to the root.

#4) Practicing a phrase of music.

Description: By utilizing longer delay times, an entire phrase of music can be played before you hear the performance repeated in the delay. Using the "Play/Listen" approach, first work for accuracy and then for consistency.

Instructions: Setting the delay for this may require a little math. If using a tempo-controlled delay, set the delay to a whole note and/or divide the tempo to achieve the desired number of beats before the recurrence of the delay. For example, 2 measures of 4/4 at 120bpm would require a 4-second delay (since each beat is half of a second), or a whole-note delay at 60bpm, or half-note delay at 30bpm. Also, adjust the feedback levels to a lower amount until the number of recurrences of the phrase in the delay are acceptable. Now, practice your phrase of music. Play it once and listen to your execution. Now play again and try to correct any inaccuracies that you may have had. Continue to do this until you feel satisfied with

your execution. I call this an "upward spiral of improvement". Once you have achieved accuracy, work for consistency by performing your phrase again at the same time the sound is coming through the delay. Listen for consistent execution and eliminate any inaccuracies.

#5) Practice multiple parts during a phrase by "stacking".

Description: For this exercise, we will use the delay as an immediate multi-tracking machine. The idea is to play one part and then switch to a new part on the recurrence of the delay. How much or how little of a phrase you are able to play is limited to your equipment's maximum delay time. The feedback should be set to get enough recurrences of the delay so you can still hear the first part while playing the last part. Make sure to set an alarm, you might lose track of time during these exercises!

Instructions: **Stack a bass line, chords, then practice improvising:** For this example, I will use the first four chords of "All the Things You Are". Set a metronome up for your desired tempo to get started, make sure the delay is set for 16 beats at this tempo (four measures). Run the metronome for 16 beats and then stop it. You will hear it still playing in the delay. Now start your bass line. Right at the repeat of the phrase, switch to playing chords (or just guide tones for single-note instruments) in the mid-range of the instrument. You should hear the bass along with it. On the next repeat, practice improvising on the chords you've played in the upper part of the instrument (or a different instrument). On the fourth repeat, listen to your creation! On the fifth repeat, start over with the bass line again.

EXERCISES USING RECORDING SOFTWARE AND MULTI-TRACKING

#1) Opening a play-along file or reference recording and adjusting tempo and pitch.

Description: When you are first learning a new groove or practicing a new orchestral excerpt, going at full tempo is usually not the best idea. Current audio software (even just the demos) allow you to pull in an audio file (even drag and drop from iTunes) or rip a track from a CD and adjust the tempo and pitch independently. This allows for you to practice at an appropriate speed as you work things up to tempo, or change the speed of the recording to match the chosen performance tempo of your ensemble. Adjusting pitch on a play-along is helpful for jazz musicians practicing transposition.

Instructions: Double-check what audio formats your software can handle. Get your audio in the appropriate format and open it in your music project. If you are really not sure how to do this, play it on an external device (like an iPod) and record it via the microphone or line-input of your computer directly into your audio software. It records in a format it can support! To change tempo, you usually just adjust the main metronome of the software. To change pitch, consult your software's help manual to see what keystroke accomplishes this.

#2) Looping a specific section of audio to perfect a section of music.

Description: Most audio software allows you to drag the start and stop of a "loop region" to continuously play part of the music project you are working on. This allows for focused practice on trouble spots in the piece you are playing. This technique is also helpful for rehearsing a large ensemble.

Instructions: Follow the instructions in the previous example for getting an audio file into your software. Look at the top of the audio area of your software. You will most likely see some sort of moveable bar that allows you to set a loop region. Click and drag it to find the appropriate portion to loop. Make sure the cursor is inside the loop region! Make sure you figure out how to activate and de-activate looping in your software. Right-clicking the loop region bar sometimes gives you that option.

Practicing with Delay: Listening

First, let us start with a simple quarter-note pulse. We will play each quarter note, with our tempo being the same speed as one response from the delay.

- If we are playing too fast, we will hear a **decrescendo** over several notes *after* our stroke, a sound similar to a buzz-stroke.
- If we are playing just a little too fast, it will sound like a concert hall (reverb).
- If we are playing too slow, we will hear a **crescendo** over several notes *before* our stroke, like a drag or ruff.
- If we are playing just a little too slow, it will sound like a reverse-reverb.
- If we are playing just right, it will sound like one stroke, only with amplified volume.

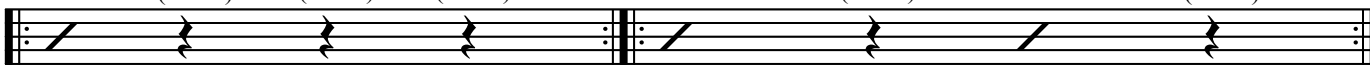
One method for practicing a one-beat pattern with delay

* *First practice for interpretation/execution then for consistency*

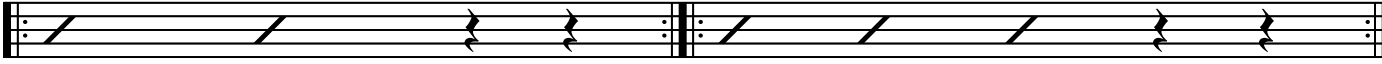
For this example, the delay is set to a quarter-note pulse.

The same idea can be applied to other delay intervals by expanding or contracting the note and rest lengths.


PLAY (listen) (listen) (listen) **PLAY** (listen) **PLAY** (listen)



PLAY **PLAY** (listen) (listen) **PLAY** **PLAY** **PLAY** (listen) (listen)



PLAY **PLAY** **PLAY** **PLAY** (listen) (listen) **PLAY** **PLAY** **PLAY** **PLAY**



Delay intervals

$$D = \frac{1 \text{ minute}}{T \text{ beats}} \times \frac{60 \text{ seconds}}{1 \text{ minute}} \times \frac{1000 \text{ milliseconds}}{1 \text{ second}}$$

BPM ♩-Delay (in milliseconds) = 60000 / Tempo(in BPM)



BPM	500 ms	750 ms	1000 ms	1500 ms	2000 ms	3000 ms	4000 ms
60	120		60		30		15
70	85.7		85.7		85.7		128.6
80	75		75	75	75	75	75
90	66.7		66.7	66.7	66.7	66.7	66.7
100	60	450	600	900	1200	1800	2400
106	566		566		566		566
112	536		536		536		536
120	500	375	500	750	1000	1500	2000
132	455		455		455		455
144	417		417		417		417
152	395		395		395		395
160	375		375		375	1125	1500
166	361		361		361		361
172	349		349		349		349
180	333		333		333		333

For workshops and bookings, contact:

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Practicing with Delay: Getting started

Here is a short timing exercise comprised of basic rhythms that demonstrates some of the basic concepts that can be explored when practicing with delay. Treat each pattern as a vamp and try to perfect it before moving to the next pattern. You can use the Play / Listen approach described earlier in order to check your execution before working on consistency.



NEXT STEP: Applying dynamics and ornaments independent of time

The delay is a great way to check to see whether you maintain consistent timing in different dynamics, as well as listening for consistency of ornamentations. Try these exercises:

- Take a particular pattern from above and try to crescendo and decrescendo the pattern over various counts. Listen back to your execution. What do you hear?
- Randomly do immediate dynamic shifts on one pattern (subito p, subito ff, subito mf, etc.), listen, observe, repeat as necessary.
- Add various accents and ornaments (flams, ruffs, etc.) and listen for tone, phrasing, interpretation, consistency, etc.

MORE STEPS: Try moving randomly around to different patterns on this sheet, or improvise your own. Also, move to a mallet instrument and practice these rhythms moving around scales, arpeggios, random notes, block chords, permutations, etc. You can also move to drumset and play a basic groove on hi-hat and snare, for example, and solo these patterns on the bass drum.

Practicing with Delay: Rudiments (Intro)

BREAKDOWN: Hand Independence

- Alternate-hand rudiments

For rudiments that alternate hands, such as a paradiddle, you can isolate and work on the independence of motion in each hand separately. By using a delay interval set to the space of one rudiment, you can work on exactness of execution while hearing the entire rudiment.

You play: *At Delay=♩, you hear:*

PARA-DIDDLE

R R R R L L L L R R D R D D R D R R D R D D
 L L L L L L D L D D L D L L D L D D

By using an interval equal to the space of two rudiments, you can listen for consistency of execution.

You play: *At Delay=♩, you hear:*

PARA-DIDDLE

R R R R L L L L R R R R R R R R R
 L L L L L L L L D D D D D

* *You can apply this method to any rudiment that alternates hands on repeat.*

- Same-hand rudiments

For rudiments that stay on the same hand, such as a paradiddle-diddle, you can break down the rudiment in various ways. To work on precision, you can play each hand's pattern consecutively and hear the whole rudiment in the delay.

You play: *At Delay=♩, you hear:*

PARA-DIDDLE-DIDDLE

R R R L L L R R R L L L D L D D L L R D R R D D
 L L L R R R L L L D R D D R R L D L L D D

Or, for consistency, you can play each hand's pattern separately

* *Practice right hand with delay, left hand with delay, and both hands (on same rhythm, i.e. "double stops") with delay*

NEXT STEP: Same rhythm but different stickings

In these examples, we worked with diddle-based rudiments. Now we can practice moving between various stickings and work to maintain a consistent sixteenth-note flow and tone. This can be done systematically or this can be improvised. There are many other rudiments that have the same rhythm but different stickings that you can compare in the delay.

R L R L R R L L R L R R L L R L R R L R L L R L L R L L R etc.

*** **MALLET APPLICATION:** *Try this technique with various 4-mallet permutations* ***

Practicing with Delay: Subdivisions

Another great feature of practicing with delay is the ability to hear precisely whether you have divided a subdivision accurately. Try the following examples with a quarter-note delay interval, listening to try to make a seamless decrescendo in the delay. This sound occurs when you play an EXACT subdivision. Otherwise, you hear anomalies in the pattern.

Now, you can stack subdivisions in the delay to hear their relation. Try to "aim" for downbeats, and then listen for the exactness of the division in the delay. In the following examples, you should always "land" on a downbeat, and whether this occurs can be heard in the delay. Here are a few more examples:

This concept can easily be extended over to practicing on a keyboard instrument. By moving through increasing subdivisions, speed and range can both be explored on a simple scalular exercise. Again, this uses a quarter-note delay:

Of course, this exercise can be played with any scale or mode, and can also be applied to arpeggios. This is also a useful method to work up a difficult passage in a piece of music. You can start with a slower subdivision and move through faster subdivisions to be able to practice a passage at various tempos.

NEXT STEP: Phasing and Displacement

An interesting and challenging exercise is to try to phase through different displacements until you hear the patterns line-up and "lock in". For example, take this ostinato figure at the beginning of Steve Reich's "Nagoya Marimbas" and try to move it through various subdivisions of the delay.