Sound Lab:
Fundamentals of DJing

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Agenda

1. What is DJing?
2. Essentials of DJ equipment and software
3. Equalization and effects
4. Beatmatching
5. Recording
6. Resources
7. Q&A

What is DJing?

- Very simple answer: a DJ (disc jockey) is a person who plays recorded music, usually for other people. There’s no requirements to scratch, make music, or play vinyl.
- DJs tend to want to find a common ground between their tastes and their audience (“reading the crowd”) via track selection.

The essentials....

- 2 **decks** for each track
- 2 **jog wheels** for (1) scratching, (2) beatmatching, and (3) spinbacks
- **Mixer** – allows you to combine multiple sound sources and play them as one
  - **EQ** – three dials on a mixer used to adjust the levels of bass, midrange and treble of a track
  - **Crossfader** – main component of the mixer allowing you to fade between individual channels or play two channels simultaneously
  - **Channel fader** – allows you to control the individual volume of each channel by the use of a slider or knob
  - **Cue level** or **headphone mix** – controls the volume of sound playing through the headphones
  - **Trim** – check and adjust the input volume on each channel

The essentials....

- **Cue button** – allows you to listen to the audio coming into the channel even when the channel fader is down so you can beat match the track that you want to play next while only you can hear it
- **Play button** – play or pause a track
- **Tempo fader** or **pitch control** – slider situated on the right hand side of the CDJ or deck that allows you to change the speed or tempo (BPM) of the track
- **Sync button** – matches the BPMs of the tracks (use only in emergency!)
- **Headphones** – placed on your head so you can hear an incoming track while mixing
- **Master output** – main audio output (what the audience hears!), use RCA or 1/4 cables to connect to your speakers and subwoofer

East/Most Accessible

Numark Mixtrack Pro (hardware) + **Virtual DJ** (software)

Medium/Moderately Accessible

Pioneer DDJ-SR (hardware) + **Serato DJ** (software)

Challenging/Least Accessible

(2) Pioneer CDJ-2000 + DJM-900

Easy

Numark Mixtrack Pro (hardware) + **Virtual DJ** (software)

Why do DJs use EQ and effects?

- Control the sound for best clarity
- Aid transitions between tracks
- Add emphasis and style to their mixes

What is EQ? How and when do we use it?

- An **equaliser (EQ)** is simply a volume control that boosts/reduces the volumes of certain frequencies heard within a piece of audio.

    - **EQing** is the art of allowing chosen individual sounds within a mix to breathe.
        - The trick is to avoid sounds in the same frequency clashing so that the output is crisp and audible for your audience's listening pleasure!
    - On a DJ mixer, we have an **EQ** control for the **high**, **mid**, and **low** frequencies in a track.

- **We use EQ when transitioning between tracks!**
    - **Example 1**: When playing two tracks together, drop the bass on both tracks so that they are both below the centre line.
        - This reduces the overall volume of your mix, because playing two tracks at the same time will increase the overall volume of the music.
    - **Example 2:** Leave the bass out of the track you are mixing in and then swap it out as the main bass line hits, removing the bass from the track you are fading out.
    - **Pro-tip: Ride all the EQ's** – a really good DJ will be constantly monitoring ALL EQ's during a mix.
        - Keeping your ear on the mix, checking for the quality of sound and making sure nothing is muddying out or clashing.

What are effects? What can we do with them?

- **FX are the herbs and spices of the DJ world!** Some people love them, some people overuse them, and some people don't understand them.
  - An **effect** is a form of audio processing, applied to a sound in order to make it sound different.

- It is best to use effects after you have EQ'd your mix appropriately! Effects can be used to help make your transitions *smoother*.

- **Common DJ EFX**:
  - **Filter**: a type of equalisation, so is related to the EQ controls (although not normally controlled by them). There are two types of filter: "low pass filter" and "high pass filter". The former lets low frequencies through but removes high frequencies, the latter does the opposite.
    - The low-pass filter is the effect that makes the track sound like it is going under water. Conversely, the high-pass filter is the effect that makes it sound like the track is becoming increasingly thinner.
  - **Echo**: repeats the signal multiple times as it slowly diffuses into nothing.
    - For example, if the word "Yeah" is used with an echo effect, it will go, "Yeah, Yeah, Yeah, Yeah, Yeah," with the fifth "Yeah" being much more quiet than the first "Yeah."
  - **Delay**: Delay repeats the original signal, but only does so once and does not fade out.
    - For example, using the word "Yeah" again except with a delay effect it would be, "Yeah." That's right, no multiple Yeahs.
  - **Reverb**: gives the effect the song is being played in a huge cathedral or big room (depends on whatever reverb is selected). Either way, this adds depth to the track being played, giving it a "roomy" appearance.

How to think about beatmatching...

Here we have 2 cars with beats that aren't aligned. Track 1 is 135 BPM and Track 2 is 120 BPM.

We'll call the left car track 1 and the right car track 2. Track 1 is travelling faster than track 2.

We can nudge the jogwheel backwards to slow down track 1 temporarily. They will then be in sync.

Because the BPM of track 1 is slightly higher than that of track 2, it won't be long before we are in the same situation again with track 1 ahead of track 2.

If we have to continue to slow down track 1 via the jogwheel again and again, this tells us that track 1 is travelling faster so we must reduce the BPM of track 1. Once this is done, we can again monitor the situation and make jogwheel adjustments. If we still have to slow down track 1, reduce the BPM even more. Keep on going until we no longer need to make adjustments.

What is beatmatching?

- **Beatmatching** is the act of matching the tempos of two separate tracks so that the beats are hitting in a synchronized fashion.
    - This then allows the two tracks to be played together in unison and create the illusion of **playing only one track**. This is the **<u>fundamental idea behind mixing</u>**.

1. Choose two songs you know very well with a similar BPM (within 5% of each other).
    a. While songs that are outside of this range can be beatmatched together, adjusting the BPM of a song to match by a wider margin than that can distort its sound (even with pitch correction activated), making it seem “off” to those who know it well.
2. Pick which will be track A and which track B, and find a cue point on track B that is on the first beat of a bar.
3. Set track A to go out through your speakers, and track B to go through your headphones. Position your headphones so that you can listen to the speakers with one ear, and a headphone cup with the other
4. Adjust the BPM of track B so that it matches the BPM of track A.
5. Start track A playing, then when you're ready, use the cue button to introduce track B on top of track A from its cue point, so the phrasing of the two tracks match.
6. Speed up or slow down one of your tracks to correct any lag using the jog wheel.

Recording

- **Recording mixes in algoriddim djay PRO**
  - Hit record button — farthest to the right in the top left toolbar
  - Hit “Start New Audio Recording”
  - When you’re ready to stop recording, hit the record button and click “Stop recording.”
  - Highlight your recording and use the drop down arrow to find your mix file.
- **Recording mixes with Serato DJ Lite & Audacity**
  - To record mixes internally, you’ll need to buy a Serato DJ Pro license.

Resources

1. Education
   a. The Art of DJing: Avalon Emerson
   b. Serato DJ Lite Tutorials
   c. Your First Day with djay PRO
   d. *How to DJ Right: The Art and Science of Playing Records*

2. Software
   a. Serato DJ Lite
   b. Algoriddim djay Pro

3. Hardware
   a. Pioneer CDJs
   b. Pioneer Mixers
   c. Pioneer Controllers
   d. Numark Controllers

Q&A