

DJing101.9 Lesson 4:

Sets and Performance

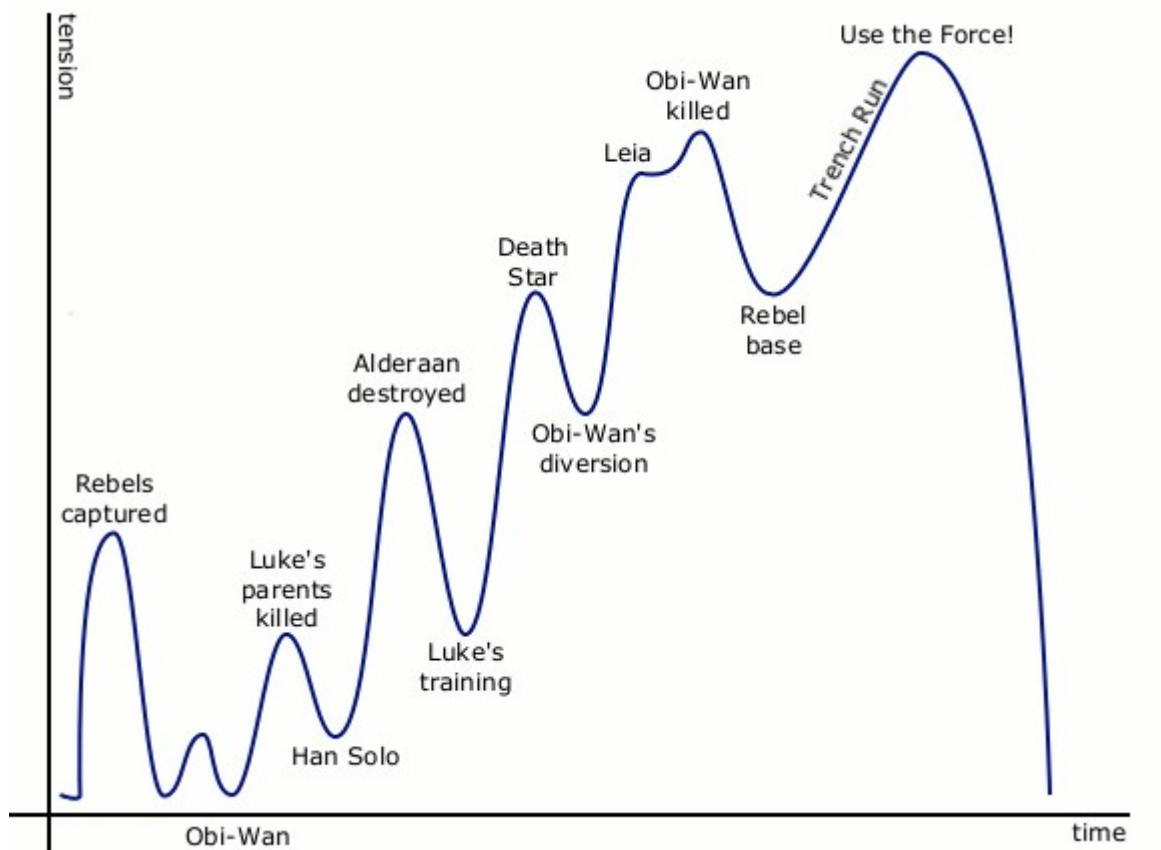
<http://www.citr.ca/index.php/programs/dj-training/>
Revision 1. Written October, 2011 by Oker Chen.

In the concluding in-class session of DJing101.9, we will think about how we construct sets and plan ahead, while reading the energy of the audience. In addition, we will prepare for our first gig by reviewing how to set up sound systems.

But first, we want to think about music beyond the individual songs. We want to see the forest, and not the trees, if you will.

Pacing

This is a graph of tension over time in the film *Star Wars: A New Hope*. This graph is just about seem everywhere in dramatic progressions, from Shakespeare's plays to badly written pornography.



This dramatic structure is generally divided up into 3 acts:

Act 1: Starts with a bang – Starships firing at each other, Stormtroopers board the rebel ship, Princess Leia is captured, narrow escape by R2D2 and C3PO, which sets events in motion for the rest of the film.

Act 2: Establish characters and crisis – We meet Luke, Obi-Wan, Uncle Owen and Aunt Beru (who are then murdered), Han Solo (who shoots first), Yoda, and see the Death Star destroy the rebel planet Alderaan.

Act 3: Climax, resolution and denouement – Luke completes training with Yoda, Obi-Wan is murdered, and the Death Star assaults the remaining rebel planet of Yavin IV. Luke uses the force. And then a medal

ceremony.

...this structure repeats for the second and third films of the original trilogy.

The build-up and release of tension is called **spacing**, and although there isn't a "correct" way of spacing, this is a foolproof structure of energy in mixing music.

Last week, we listened to the BBC 5 Minute mixtape of The Twelves (<http://www.youtube.com/watch?v=DwAIDN1umn0>). If you listen to it again, you'll notice this mixtape follows the above graph perfectly. The music starts off exciting, before settling into a funky house groove, and then it grows its musical tension until it climaxes a minute before the end. Everything from the vocals (high-pitched vocals on high energy parts, bassy vocals on low energy parts), to the instrumentation (string instruments and synths are prominent on high energy parts, bass synths are prominent on low energy parts) to the key progression (goes down after the initial starting bang, then goes up twice to reach climax) all mirror the above graph.

Unfortunately, a common habit with DJs is to open at a high amount of energy and go up from there. Human beings are extremely adaptable, if nothing else. As a result, we tend to adjust quickly – if a room is too loud or too bright, our ears grow less sensitive or our pupils shrink down. Likewise, if a mix is too energetic, human beings adjust rather quickly and subsequent high energy tracks begin to lose their impact. People start to get bored.

A good mix will have variety. Any genre has variety within it: Dubstep has songs that are filthy and loud, but also songs that use beautiful melodies. Hip hop has dark club tracks that stir up primal sexual energy, but also songs that feel like sunshine (such as JayZ's *Empire State of Mind* single). House can go from funky to electro to trance quite quickly. Even older styles like jazz has upbeat swing to bluesy saxophone solos. We want to find progressions that take us to and from these peaks and valleys in energy.

Sets

An incredible amount of subtlety can go into a set. For instance, you can refer to historical progressions by mixing from Sugarhill Gang's *Rapper's Delight* (hip hop) to Chic's *Good Times* (disco) to Daft Punk's *Around the World*, which all have the same bassline (this is not a coincidence).

In an ideal world, a set would have a "thesis" of sorts, taking the audience on an aural journey to another place, time, or culture. An incredible set can start the audience on something familiar, like a top 40s pop track, and take away more and more until all you're left with is the percussion part of the song, which is then joined in by a chorus of hand drums that reaches back to humanity's primordial rhythms, locked up in the psyche of each and every person.

Realistically, you'll end up playing top 40s requests that can lead to one or two songs of your choice before you have to resume playing sing-along hits. At least until you're famous. Once people are paying money to see you specifically, you will then be able to do whatever you want musically. This is why producing is such an important priority for many DJs.

The Power Combo

We've been working greatly with three tracks: D.A.N.C.E., *Born This Way*, and *Hot'n'Fun*. All three are on the pop side of house music, and all three have relatively high energy. These three make a power combo.

Most of the time when people think about how DJs mix music, they tend to think in individual songs. This level of management is not ideal when you end up playing for more than an hour. In other words, we want to think about forests, not trees.

Power combos are like mini-sets with a mini-thesis. We want to develop power combos that serve as many functions as we need. We want power combos for bringing the energy up and down, power combos that speed and slow down the tempos, and power combos that maintain a high level of energy for a series of songs, like the three tracks we currently have. Of course, for every power combo that maintains a high level of energy, we ideally can precede that with a power combo that gradually builds up tension and follow up with a power combo that changes the direction of the music to something stylistically new.

The nice part about the power combo is that you will habitually create them. By now, you should have an instinctive urge to play Lady Gaga every single time you hear D.A.N.C.E., including on the radio. That association is part of the power combo. Power combos are extremely safe to mix because you have practised the transition between the 3 to 5 songs that make up the combo and you know they work together musically.

The beautiful thing about power combos is that the actual power combo can be swapped easily. For instance, another high energy electro music power combo can take the place of our current high energy power combo. Thus, you want to think about sets as **a series of power combos, not a series of songs.**

Beyond House and Hip Hop

Having a wide range of sets is extremely important. You never know when you end up at a restaurant that wants to set a classy ambience with jazz music. Perhaps you find yourself at a rural pub that wants folksy country music. Maybe there's a speak-easy party that is looking for a DJ with swing music. Sometimes there parties that are inspired by 8-bit video game theme music. Samba has caught on quite well in Vancouver, especially on high-paying boat cruises. You want these doors to be open to you.

As a DJ, you are playing for the audience. A wide range of musical abilities will open the biggest number of doors. This is why it's important for DJs to be curators, another parallel we draw with the fine arts world.

Art gallery curators don't just show fine art because one piece is interesting. It is the relationship from one piece to another that is the focus of an exhibit. That exhibit additionally, ties to other movements and exhibits. Likewise, as a DJ begins to expand his or her style, the result is the understanding of the vast web of connectivity that music has. Even within top 40s pop music, there is plenty of fascinating stories that encourage the avid DJ to explore. Why is Lady Gaga a symbol of the queer community and why has it been female pop divas who have had that role, ever since Judy Garland? What does Blondie's #1 Tide is Rising have to do with the de-colonization of Jamaica and why was it produced for American pop? Why did drum and bass establish itself in Europe, but not so much in America? There are concrete, socially-related reasons for all of this.

How to Expand Your Music

The Hype Machine (<http://www.hypem.com>)

- summary of major music blogs
- large collection of top 40s remixes
- monthly podcast of new music

LegalSounds (<http://www.legalsounds.com>)

- free download of current top 40s singles
- subscription service that is continually updated

SoundCloud (<http://www.soundcloud.com>)

- the industry standard for DJs to show off their work
- requires you to subscribe to DJs to be useful

MixCloud (<http://www.mixcloud.com>)

- like SoundCloud, but for mixtapes
- no option to download the MP3 file

MixCrate (<http://www.mixcrate.com>)

- extremely well organized mixtape website
- allows MP3 downloads

Video Downloader (<https://addons.mozilla.org/en-US/firefox/addon/video-downloadhelper/>)

- immensely useful plug in for Firefox that allows you to save streaming video/audio files
- easy bootleg of most MP3 streams, including SoundCloud and Hype Machine

Google (<http://www.google.com>)

- one of the best tools to get MP3s is sitting right under your nose

Talks About DJ Philosophy

These are excellent. Please watch them.

DJ Rupture at Gel 2011 (http://www.gelconference.com/videos/2011/jace_clayton/)

- American DJ during a time of music segregation
- the importance of listening, not only to the music, but to the audience

Kirby Ferguson at Gel 2011 (http://gelconference.com/videos/2011/kirby_ferguson/)

- filmmaker of Everything is a Remix (<http://www.everythingisaremix.info/>)
- details the importance of copying as a necessary step to creation

Setting Up Speakers

Speakers are better known as PA Systems, which technically stands for Public Address Systems, but really are just a set of high-powered speakers that are connected to a mixer, sometimes with a microphone attached.

The Mixer

A mixer is the hub of audio signals. What this means is that anything that produces a sound ultimately goes into a mixer, from your laptop to your microphone.

Input

Generally, you'll encounter two to four channel mixers, where you can plug in one channel per audio source. The pictured mixer is one that CiTR has for rent – it allows you to plug in four channels with microphone controls at the left hand side. The four channels means you can:



- have four laptops plugged in
- two laptops and two turntables
- one laptop with a backup MP3 player and two turntables

As DJs work together in teams, you'll generally have at least three channels – two main channels, usually for the two turntables, plus an auxiliary input for a laptop of the DJ partner. In the case of a solo DJ, that will serve as the input for a backup MP3 player should your equipment fail.

Inputs are generally in RCA and 1/4" connectors. (connectors explained later)

Output

Most mixers have two outputs. Each of the two outputs have left and right mono channels, for a total of four output plugs.

One of the output pairs is labelled master and the other booth. Master output is meant for the left and right speakers while booth output is meant for speakers aimed back at the DJ so he or she can hear the same sounds the audience can.

Outputs are generally in 1/4" or XLR connectors.

Balanced In/Out

Most master outputs on DJ mixers differs in one significant way from booth outputs: the master output is **balanced**. This is a technology that eliminates electronic interference that the audio cables tend to pick up. Cables act like gigantic radio antennae and pick up electromagnetic signals from just about everything from cell phones to light bulbs. This is why you often hear an incredibly annoying buzzing noise, as the frequency of electricity running through nearby lightbulbs is being amplified. If you connect a **balanced output on a mixer** to a **balanced input on the speaker**, you eliminate a large portion of electromagnetic interference.

The Speaker

Speakers come in two classes:

Active speakers

Active speakers are self powered, which you can tell because they have a power plug on the back. Active speakers are a lot more heavier, and tend to also have a mixer on their back, allowing easy adjustment of volume and tonal levels at the speaker's end. If you were to use active speakers, you just need to plug the master output of the mixer into the input of the speaker and turn everything on.



Passive speakers

Passive speakers need an external power source, called an amplifier (or plain amp), to function. The advantage is that these speakers tend to be extremely light, allowing easy suspension of speakers from high points of the room. However, amps tend to be incredibly heavy and ungainly. If you were to use passive speakers, you need to plug the master output of the mixer into the input of the amp, and the output of the amp into the input of the speaker. **Never plug an output of an amp into anything other than passive speakers.** You'd be surprised how much shrapnel an exploding capacitor can give off, let alone the thousands of dollars of gear you'll need to replace.

In all cases, speakers should be elevated. We already learned that high frequency sounds can damage hearing and doesn't propagate through human bodies. Putting your speakers on a stand that elevates the speakers above the audience's heads will make everyone happy without you needing to turn the volume too high.

Inputs are generally in 1/4" or XLR connectors for passive, with RCA as well on active speakers.

Common Connector Types

TRS

TRS connectors are everyday plugs you use from headphones to guitar jacks. They were invented for telephone switching, so they're extremely easy to plug in and out.



1/8" or 3.5mm: this is your standard small earbud jack, found commonly on MP3 and CD players. Your laptop likely outputs sound in 1/8". These are also called mini-jacks, but try not to use this name as there are multiple types of mini TRS jacks.



1/4": 1/4" is an industry standard connector for everything from electric guitars to powered amplifiers. They are heavy duty and probably the most common format out there.

The single most important aspect of TRS connectors is that you plug stereo outputs (both left and right channels on one cable) into stereo inputs, and mono outputs into mono inputs. The pictured connectors above are both stereo because they have two rings on the shaft of the connector. Mono connectors only

have one.

RCA



RCA connectors are commonly known as the red and white pronged cables that connect your DVD player to your TV. This is the industry standard for plugging in equipment into mixers, such as turntables or computers.

Three pronged RCA cables, like the one in the image, don't differ in function to audio RCA cables with two prongs. The third yellow cable is designed to carry video signals while the red and white connectors are designed to carry the left and right audio channels, but there's no reason why the yellow cable can't carry audio.

XLR



XLR cables are heavy duty lines that tend to run powered signals from the mixer to the speaker. Every previous class of cables are almost always male to male – that is the ends of the cables are the same.

XLR is extremely special. Usually, one end is male and the other is female. XLR cables are robust enough that you can chain them, connecting one cable to another to double the distance your speakers can be from your mixer or amp.

This is why microphones almost always use XLR connectors.

Broadcasting from your laptop

If you're in charge of performing, you need to figure out this:

How do I convert the output signal of my laptop into an input signal of the speakers?

For most powered speakers, this is quite easy.

Original device:

Laptop (outputs 1/8")

Adaptation device:

1/8" to RCA adapter cable (outputs RCA)

Active Speakers:

Takes RCA signal directly

Turn everything on, bring the volume up and you're good to go.

Sometimes this isn't so easy.

Original device:

Laptop (outputs 1/8")

Adaptation device:

1/8" to RCA adapter cable (outputs RCA)

Shared mixer:

Takes RCA signal, assigned to channel 3 on mixer (outputs 1/4")

Amplifier:

Takes 1/4" signal, outputs (1/4")

Passive Speakers:

Takes 1/4" signal directly

In this case, you need:

- a 1/8" to RCA cable to plug into the mixer
- two 1/4" cables to plug the mixer into the amp
- two more 1/4" cables to plug the amp into the speakers

The real issue is that if you don't have sound coming out the speakers, it's a nightmare to figure out why. The mixer, any of your 5 cables, the amp, or the speakers can all be the cause. The amp, the mixer, and your laptop all have volume knobs that could have been turned down. Maybe you're accidentally assigned to a different mixer channel. Who knows?

This is why it's crucial to have sound check. Arriving to test the sound an hour before a gig will cut down many headaches further down the line. There are so many times where DJs ultimately did not end up playing because one specific type of cable was missing.