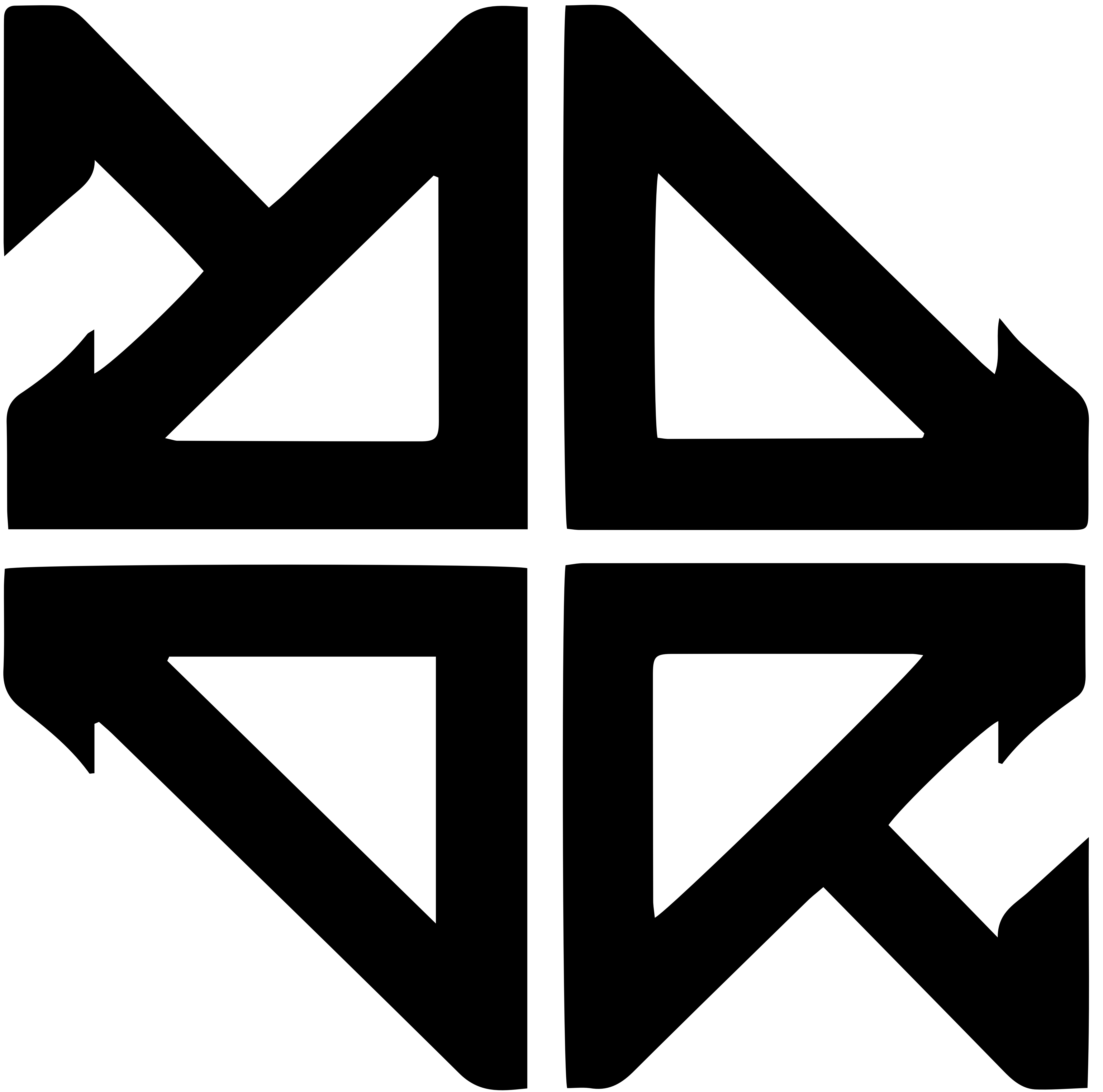




DEAD ROBOT

MUSIC GUIDE

for artists, producers, engineers, and creatives

looking to learn about sound design, music theory, mixing, mastering,
staying organized, and finding your voice

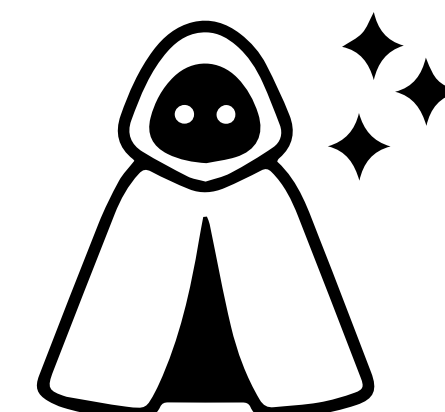
✦ CONTENTS ✦

metaphysics of creativity	4
starting a song	5
melody & music theory	6
— chords & scales	6
— improvisation & intuition	7
sound design methodology	8
— sound design recipes	8
— more sound design recipes	9
— sound design strategies	10
creative sampling & reverse engineering	11
— sampling techniques	11
— more techniques & reverse engineering	12
effects & presets	13
— FX basics & order	13
— FX chains & presets	14

✦ CONTENTS ✦

arrangement & automation	15
template building	16
mixing & mastering	17
— approach & methodology	17
— mixing tips	18
— mastering tips & referencing	19
staying organized & future-proof	20
exporting & stems	21
actually finishing music	22
— workflow diagram	22
— tips for fully finishing songs	23
extra resources	24

METAPHYSICS OF CREATIVITY



Music is an offering: follow the feeling, don't overthink trends,
and keep your process rooted in self-expression

Music and art, as well as life in general, is very magical and mysterious, and I don't claim to have any of the "right answers" on what music is or should be, but below I will share my overall views, theories and philosophy on music, creativity and expression in the hopes that some of what I say will resonate or inspire you in some positive way, or help you gain a new perspective on music.



I've known since I was a little kid that I wanted to make art and be a musician: it's been in me like the whole life of the oak tree exists within an acorn. I was even making my own music and custom-designed fonts on my computer in middle school, using any information and technology available to me to dive into the the language and world of art. We all have our own unique path and purpose, and having trust and faith in the process of everything spiraling and unfolding is crucial to creation. You're here to express yourself honestly and fully, and to show the universe who you are, so be bold, shameless and proud about your art, but understand we all are equal and divine and magical, we all just have different purposes and sparks and skills. Your unique voice and perspective matters more than you know.

Music and art are made to connect to others, or express your feelings, so don't even worry about any of the more capitalistic parts while creating, focus on making the idea as good as you possibly can, like an "offering to God" as Rick Rubin says. Overthinking the marketing or anything can really mess up the vision because then you start to make the song for what you want to get from it, instead of expressing the idea as authentically and honestly as possible. You should be focused on sharing what you love and expressing your own emotions, not appealing to the crowd or what you think is trendy, although learning from the trends is crucial to be relevant and culturally speak a similar musical language. What matters most is honestly speaking your truth or telling a story with a real message, not fame or money.

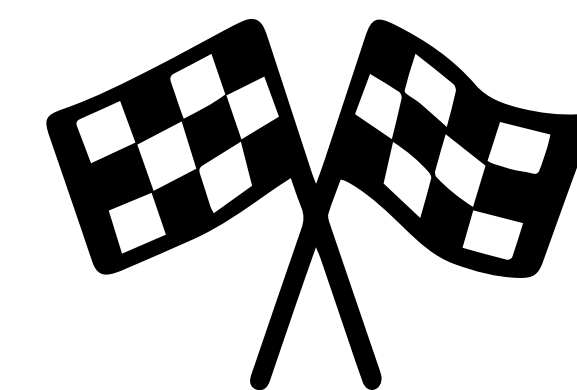
I like music that pushes boundaries and tells a real story, takes risks, but still is culturally a little within the acceptable music range, like a music version of the "Most Advanced Yet Acceptable" MAYA principle. It dances on the line between culturally known and accepted, and novel, unique and alien. It's also fun to completely break that rule, and just make what catches your attention, which could be just guitar and vocals and a great story, or just weird crazy experimental distorted Brazilian percussion or something. There's no rules!

There's a real true magic to art and music, so don't stay in your decision making /analytical /critical headspace part of your brain for too long, or you can ruin your spark. Only turn on the critical part when you feel something could be improved, but don't let the ego get involved like you're the best or worst artist ever , it's often out of your control, you are just an antenna. Your intentions, labor and focus are a little more in your control, so choose a great intention before writing or creating. Aiming to help others learn, make someone less lonely, add more love to the world, being silly and playful, making a high energy catharsis song, helping people connect, those are all good intentions to me, as the source intention allows your focus to be tuned to those ideas consciously and subconsciously, which is most important.

Creativity ripples out into the universe in unexpected ways; sometimes you don't even know why you made a song or what it truly means, you're more of a vessel for the universe than the creator of the idea, so don't feel too attached to it but still be proud of your hard work and let the ripples ripple out without too much judgement. Often times, my personal favorite song is not anyone's favorite song, so you don't really know how it will be perceived , but if you know that you like it and are proud of it, then it may positively affect someone as well, so you should try to fully finish and release stuff as much as possible and not hoard music.

We are all limited perceptions of the infinite made finite, in a reflective mirror trying to understand ourselves, and those limitations can be painful, but they also can be a walled garden for creativity to bloom. Use the constraints wisely to learn, but remember the hierarchies and rectangles are useful illusions for your goals, not reality itself. The map is not the territory, so please stay humble and open-minded.

STARTING A SONG



Sketch and record quickly, improvise freely,
and use small constraints to drive creativity

Everyone has been in a place, where you're not entirely sure what you want to create or how, so here are a few tips on ways I go about starting a new song, when the inspiration hasn't been divinely beamed to me but I still want to be creative

MAKE A REMIX

Make a DIY acapella of your favorite song and remix it. So many song's vocals are uploaded to youtube, that any song you love can be flipped and rearranged with your unique perspective. Starting with something you already find beautiful is an easy hack to creating instrumentals or feeling quickly inspired to focus on an idea. If you manipulate the original song enough, and then delete the original sample later on, you can even use that remix idea as a completely new original song. There's no rules, so try having fun pitching the entire song down or up, completely changing the genre, making a song with sad lyrics sound happy, anything you want to spark inspiration.

JAM

Plug in a guitar, load your favorite synthesizer plugin, and just start jamming. You can even use your laptop keyboard to play (which I do literally all the time) so just have fun and experiment with melodies and see what happens. For me, as long as I start to try out an idea, eventually, or immediately, something magical and cool will start to happen. Jamming is much easier than drawing in midi notes with a mouse for me, and if you snap your keyboard to certain scales (see page 6) you don't even need to know any music theory. You can even jam single notes, and as long as the synth or sound is interesting, that could be the foundation of an entirely new full song.

MAKE A LOOP

Make a simple 2,4, or 8 bar drum loop. Drums are an easy and fast way for me to find a unique and fun groove, and once there is a solid foundation I can add any other layers to make it into a more full idea. I also love to start with a guitar loop; even a simple 4 chord guitar or melodic instrument progression can spark an entire full song. See page 23 for ideas on how to turn a loop into a full song easily.

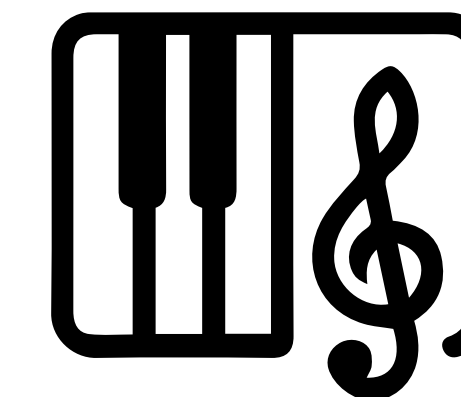
TURN CONSTRAINTS INTO A FUN GAME

Purposefully limiting yourself can very often yield amazing results. Try writing down 3-4 constraints for the song, limiting the BPM, genre, and sounds you're able to use. For example, try making a 140bpm melodic dubstep song only using the recorded meows of your cat. Or maybe the constraint is to only use recorded sounds from your kitchen or only sounds from nature. By limiting the complexity of possibilities, you can actually free yourself to having fun and creating an achievable goal

SAMPLE YOURSELF

Spend time one day only creating samples, or only recording sounds. The next day, combine all the sounds you created the day before into a new song. This is a great way to get very original and unique sounds and build your own style, as you made everything yourself. Another method I do, is to use my old songs as motifs and take bits and pieces from them. I keep every song I've released organized in folders with all the sounds separated, so any idea I've made in the past can be source material for a new song. I will very often sample my own drums and percussion from other released songs, warp them to play at a different speed, chop them up, or layer them to flip them into something new and fresh. I already spent a lot of time mixing them and making sure they all sound good isolated, so why not sample yourself if you own the rights to it? You can also take full exported mp3 or wav demos you have created, and repitch or chop them up in a new project. The drop of my song "Miss U" was created this way, by taking an unfinished demo, reversing it, and then adding new drums and bass over it too. I also have an unreleased song which mashes up elements from over 10 different songs I've made, which was a really fun creative challenge. Don't be afraid to think outside the box or reuse a sound you already used before.

MELODY & MUSIC THEORY

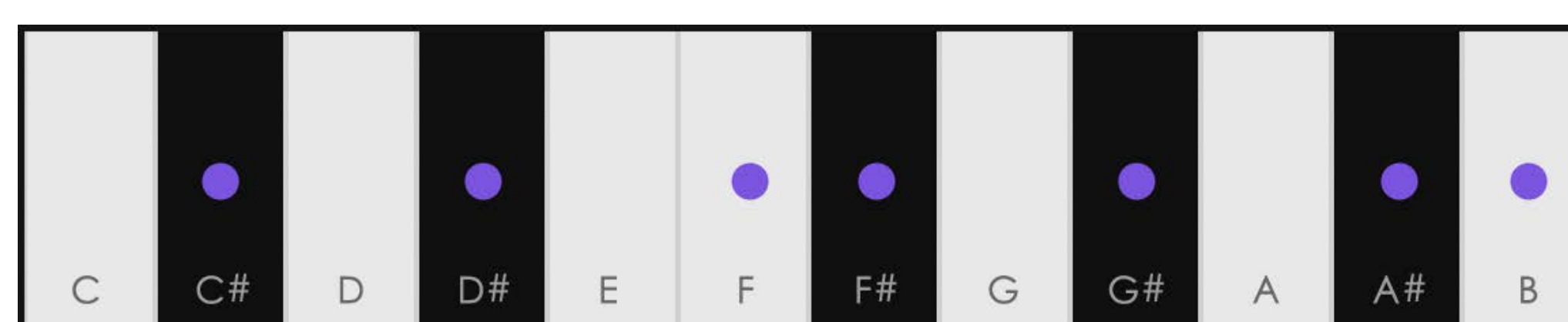


Music theory gives you a foundation, but the best ideas often come from honest expression and exploration

MY APPROACH TO MELODY

Music is a language, and chords and melodies are complex and contain many meanings, so it's important to fully immerse yourself into music and build up your taste, listening and learning from all the music that catches your attention. To me, melody is mostly about following your intuition, backed by music knowledge, to express your emotions or tell whatever story wants to be told through you. Melody and chords come easily to me, since my style is usually improvisational and fully based on playing real instruments, MIDI keyboards, and singing, so it's not an exact science on how to do it, but I will share a few insights and tricks into how I think about it, as well as some tools to make it easier to go from idea to reality.

I try to keep my approach to understanding music theory as simplistic as possible, and even though I understand a good amount of theory, I try to only think about melody in terms of major & minor keys and sharp notes. Since every major scale has a corresponding minor scale, you can essentially break down most modern popular music into 1 scale, just with different root notes. I only think of scales in terms of sharps, instead of both sharps and flats, because they are two ways to describe the exact same thing, which seems needlessly pointless to me. For example, one of my favorite keys is F sharp major, and the corresponding minor scale is D sharp minor. Both these scales contain the exact same notes "F#, G#, A#, B, C#, D# and F," but their root note or starting note changes.



The F# Major scale (purple dots)
on a single-octave piano

Your chords are your sonic bed to the melodies and provide an emotional, encompassing mood to the entire structure of the song. It's easiest to start by finding the root notes of the chords you'd like to play, then slowly add more and more notes on top of those root notes to play with the desired emotion and mood you're looking for. You can even just have a whole song playing one chord, on 1 root note, as long as compositionally it is interesting and sounds nice, there's really no hard rules. Especially in electronic music, you will find that some songs only have basses playing 1 note the whole time. Another fun trick is to have each new instrument you add into your song only playing one note within the chord progressions you chose, adding a new instrument with new timbres to play new notes, I've found this can make really interesting almost trance-like cinematic feelings to any genre.

The basic chords I would say you need to know, within a C Major scale for reference are the following:

C Major, D Minor, E Minor, F Major, G Major, & A minor

Making simple triad arrangements of these chords (sometimes adding a root note an octave or 2 lower too) will be all you need to start building a song, simply shifting all the chords up or down to match whatever key you want the song to be in .

My personal favorites are A Major, F# Major, E Major G# Major, and C Major, as they best work for my voice and guitar tunings.

USE MODERN TOOLS

You don't need to be a pro musician to get amazing sounding chords, melodies, or riffs. There are so many built-in tools in FL Studio and Ableton, and awesome MIDI vst plugins to help you generate and improvise awesome melodies. "Chord Progression Generator" in FL Studio, as well as the "Riff Generator" and chord "Stamp" tools, allow you generate all types of chords and melodies randomly, and in Ableton there are awesome tools and MIDI effects, like Chord, Scale, or the new MIDI Tools. Test out random chords and progressions together to see what works, and have fun with it not being too attached to any outcome.

MIDI note quantizing, which is essentially like autotune for MIDI, is limiting the notes you can play to certain scales, snapping any notes played outside the scale back into the scale. This can be really fun, because if you have a keyboard, you can play anything and it will sound good and in key. I even made my own little plugin called "Snapscale" which does exactly this.

Other great plugins for chords, arps, and melody generators include Cthulhu by Xfer Records, Harmony Bloom by Mario Nieto, and my own 2 plugins "Constellations" and "Orbit", which can randomly generate melodies in certain preselected scales.

Don't be afraid to use the internet and already released music as creative resources to draw inspiration from. There are MIDI chord progression packs or melody packs online , where you can find thousands of free midi chord progressions. Look up the chords or MIDI file remakes from your absolute favorite songs, then randomly reorder the chords used in a new way, in a new key, in a new tempo, using a new instrument. Use the entire human history of music knowledge to your advantage!



IMPROVIVATION & INTUITION

Some of my best melodies, jams, and song ideas have come from happy accidents, experimenting and getting into a flow state where I have no expectations and just follow the feeling. I think doing things by hand, manually, breathes life into any art, and offers a beautiful randomness and human imperfection that can't be easily replicated. Especially when using digital tools to make art, real instruments and playing real midi keyboards or using real samples offers a beautiful imperfection that really makes music unique and magical to me. Here are a few tips on how I try to get into a flow state musically, and how I try to get the technology to work with you rather than against you.

INTENTION

Going into creating, even if you do not know what you are going to make exactly, you should set positive intentions. Your goals and vision for the music and your creativity should be positive and rooted in love, giving, fighting for truth, fun, play, and openness. Having a clear goal will help you in organizing all your ideas and will let the universe know how it can help you best, like an honest ritual.

BE OPEN

Similar to having positive intentions, when you're going to write melodies or create, stay open-minded and try to let the best ideas win. Not being overly attached but also determined and trusting has been a key for me to get through the recording process. I try to always do it right the first time when recording, but when jamming, or getting the perfect guitar loop, I'll need to record the same loop dozens of times until I can get the exact perfect take. Trusting yourself and the process teaches you patience. Be okay with deleting things or trying again if something doesn't sound good, but it's also wise to save different versions of projects and sounds throughout the process just in case too. Sometimes you will go down too many rabbit holes and end up with a completely new song from the original idea, which is great, but sometimes that original idea is also cool so you should save it to come back to later. Being open is simply having trust in yourself, combined with the faith that if you show up and try, cool things will happen. And they will.

MAKE THE TOOLS INVISIBLE

This comes down to practice and showing up often. The more you show up and learn the software/instruments, the more the steps to get something sounding beautiful become easier. When you have worked with the same DAW or same guitar for 5 years almost every day, you're not going to have to think about how to get a certain tone or sound, because you have tried and failed so many times before that you've got the process dialed into muscle memory. The more you can get parts of the music making process into your subconscious, the better. This way you can just simply visualize and manifest your ideas even faster and stay in the flow state without overthinking.

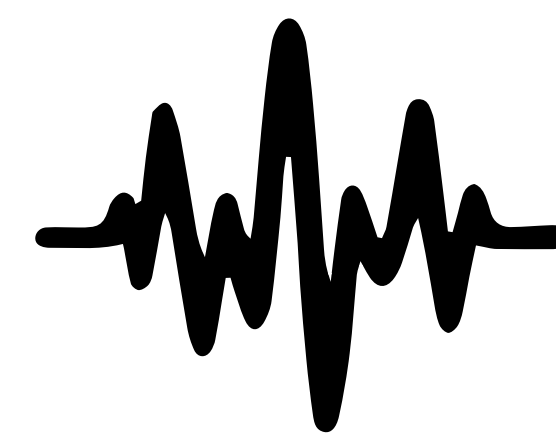
LEAVE YOUR COMFORT ZONE

Paradoxically, sometimes struggling to figure out a new piece of software or instrument will yield even better results than with tools and instruments you know like the back of your hand. When something is new and challenging to you, you will try things with it you have never tried before, and you don't have any familiar neural pathways you can ski down, it's all fresh powder. Not knowing any "rules" means you have a completely fresh perspective on it and are willing to try weird stuff, maybe things no one has ever tried before. The balancing act of diving into new unknown creative territory, mixed with what you do know too, can be a lovely tightrope walk, and it can apply to anything, from playing in a new scale or genre of music, sound design, singing, to an entirely new way to play an instrument. If you never F around, you will never find out.

BE OKAY WITH IMPERFECTION

Art is subjective. Your absolute favorite song by your favorite artist is someone's least favorite song. Not everything you create will be amazing and perfect to you. I've only released probably about 10% of all the music or less I've made in my entire life. It's okay to try things and sit on them for a few months or years, and see if you still like it later. It's okay if you don't have the fanciest equipment or nicest studio monitors or anything like that. You should work with what you have in the present moment, and you'll see you have a lot more than you'd think already around and within you to make magical music. My favorite phrase is "Progress Before Perfection"

SOUND DESIGN METHODOLOGY

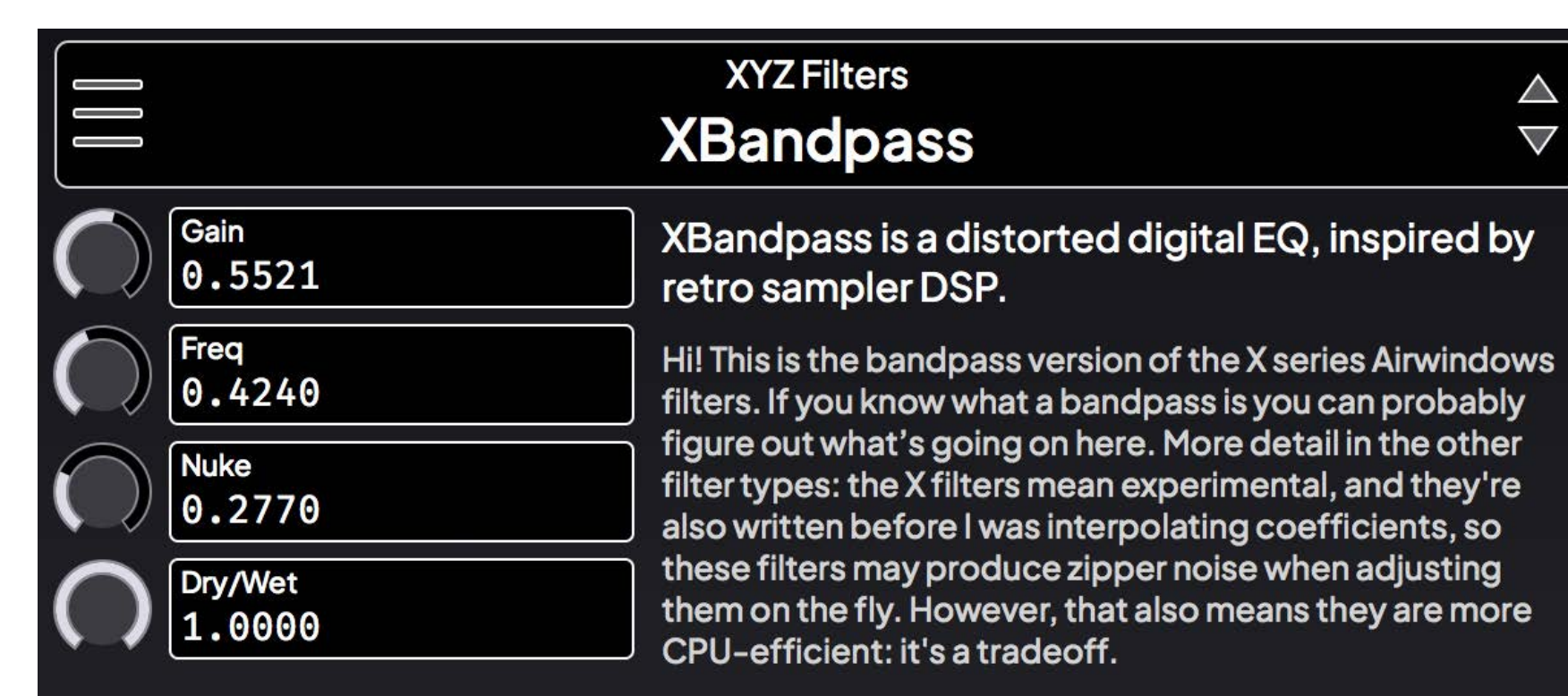


Balance melody and texture, shaping digital sounds until they feel imperfect, organic and human

One of my favorite aspects of creating music digitally is the ability to create insanely unique, frequency-rich, and beautiful sounds from simple starting points. This emergent complexity, or simple rules governing complex systems, can start from simple wave shapes (sine, saw, triangle, square), or from manipulating samples or presets, using your skills and effects to breathe life into a beautiful world of sonic textures. Taking a lot of time to get to know your plugins, playing and experimenting how they work is a key for sound design, as the more you know the tools, you can start to build an inner “language” of sounds and their styles how how to achieve the desired feeling. Below I’ll share some of my favorite techniques & tricks for easily creating and enhancing sounds to make them more beautiful, complex, imperfect, organic, and human.

FILTERING / BANDPASS + SATURATION

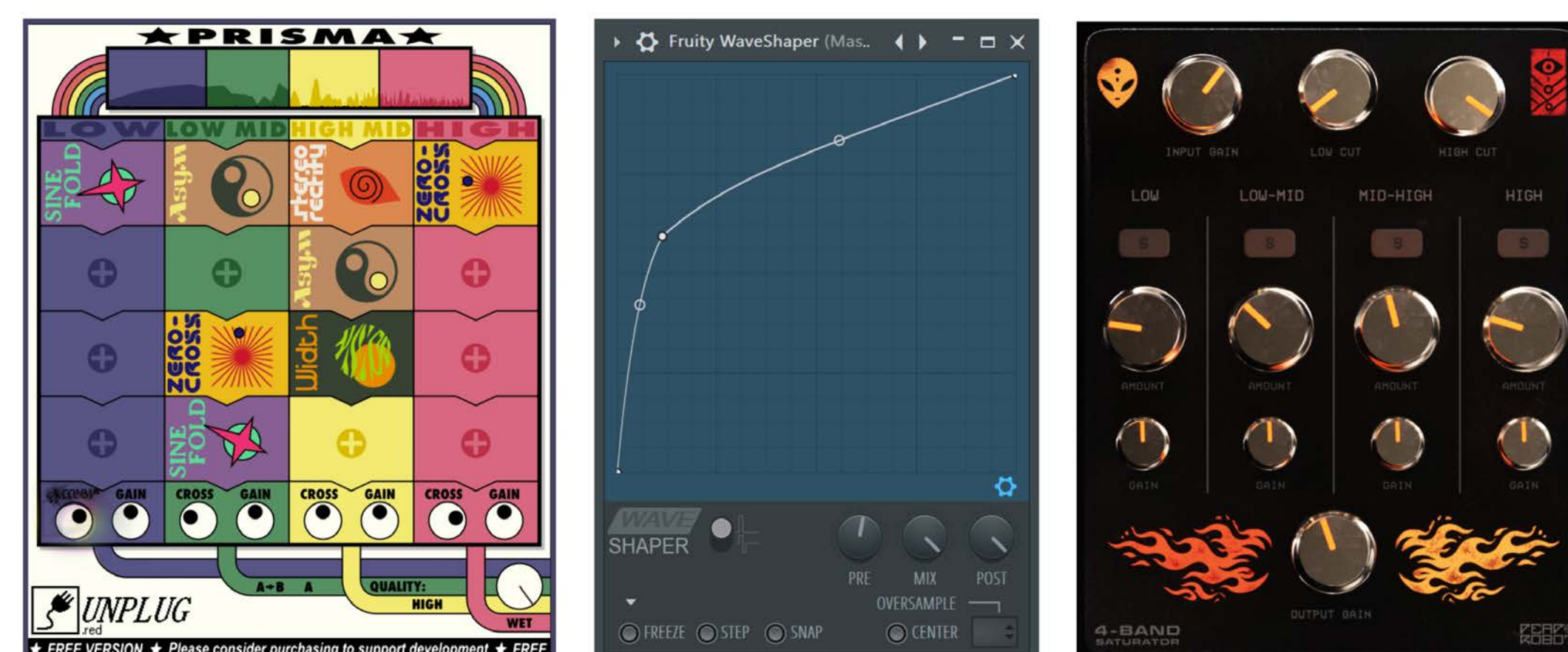
Utilizing bandpass filtering, followed by saturation, gives each sound their own unique space within a mix. Using xbandpass (free), standard EQs (high pass + low pass), and my 4 Band Saturator plugin (which I designed specifically for this) limits a sound to its fundamental important frequencies, reducing masking in a mix. The post-filtering saturation emphasizes those frequencies subtly, adding higher, mathematically-related harmonics, as well as increasing the perceived loudness. I use this technique on almost every single sound, especially snares, hi hats, synths, vocals, and FX



one of top favorite free plugins “xbandpass” by airwindows, utilizing the “Nuke” setting for a really tasty saturation effect

DISTORTION/SATURATION

Beef up any and all sounds with your DAWs built-in distortion and saturation plugins to make them larger-than-life and in your face. Ableton’s “Glue Compressor” and FL’s “Fruity Waveshaper” are my favorites. For different and intense flavors I use Le Phonk (free), Mackity (free). For more multiband control, I love Ohmicide (free) , Prisma (free), MSaturatorMB (paid), Izotope Trash 2 (paid), and my own “4 Band Saturator” plugin I designed (paid), all of which give you control on individual bands for subtle or crazy crunch, texture, and just overall cool interesting harmonics.



3 powerful distortion plugins, Prisma, Fruity Waveshaper, and DR 4 Band Saturator

FORMANT SHIFT FILTER

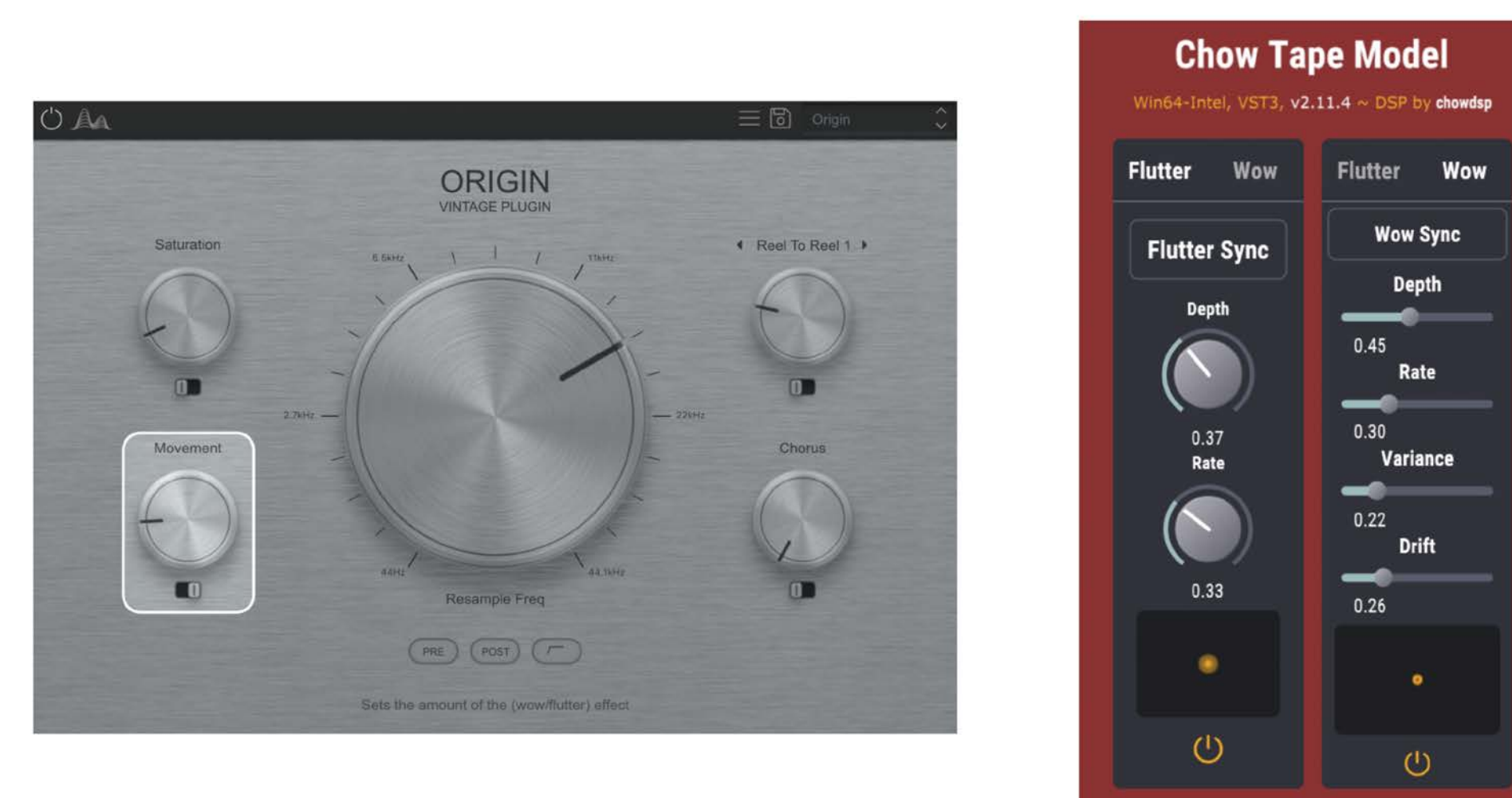
Instead of using a lowpass filter, try using a formant shifting effect like MAutoPitch (free), Pitchmunk (free), or Little AlterBoy (paid) to filter and manipulate drums, synths, instruments, and vocals. I love to turn the formant shift down between -1 and -12 semitones for interesting results. FL Studio’s Stretch Pro and Ableton’s Complex Pro do similar things too, and Infected Mushroom Manipulator (paid), QuikQuak Pitchwheel (paid), and Minimal Audio’s Formant (free) the are also awesome.



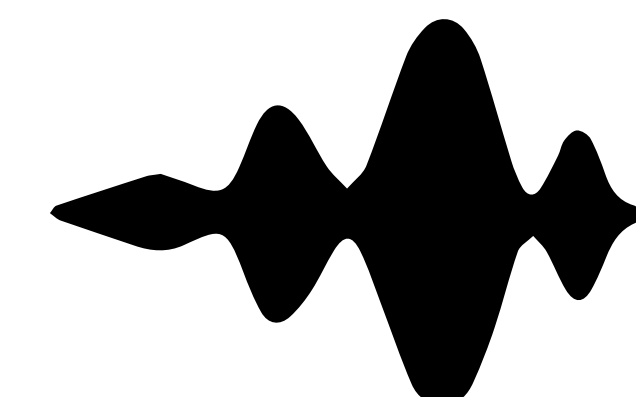
my favorite 2 quick and dirty formant shifting effects, Little AlterBoy and MAutoPitch

ANALOG MELODIES

Emulate the beautiful imperfections of analog tape/vinyl on synths. Add a lowpass, some saturation, VERY subtle bits of noise (like Silhouette by airwindows), reverb, delay, wow & flutter, OTT compression at like 30-70% intensity, and EQ in between the various effects too. The wow & flutter + compression after the delays and verbs will create some beautiful & unstable sounds, and mixing in stereo effects into this chain will yield some really nice wide results too.



my 2 favorite free plugins for wow & flutter, Origin and Chow Tape Model



LIVE-RECORD THE PROCESS TO AUDIO

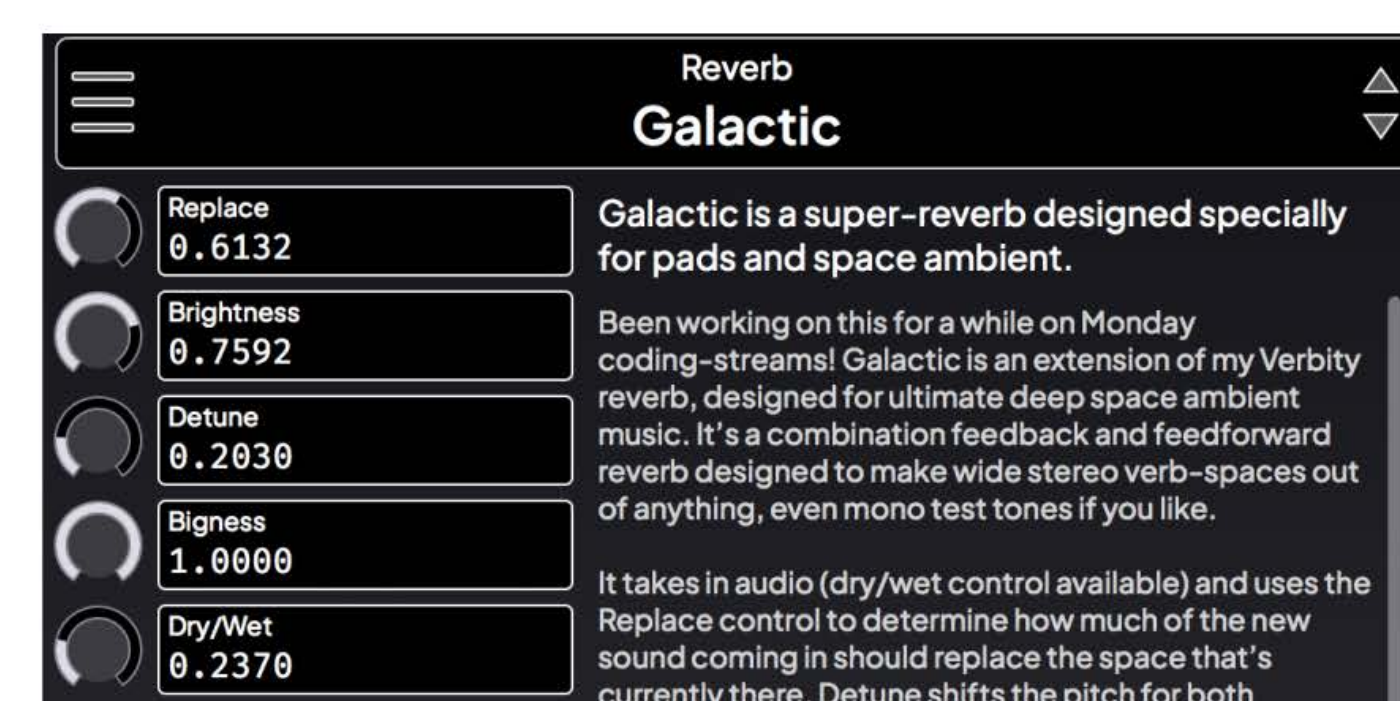
A gem of a method I always do is to route audio out to record your synth sound design process, recording audio from a synth vst while you tweak and adjust parameters. Try live-tweaking filters, FX, wavetables, anything, or mapping several of knobs within a plugin to a macro, which you then move with your mouse or a MIDI controller. I love to use FL's "Edison" at the end of an effects chain, or Ableton's fast audio routing to record to a new track. Some of my best and craziest sounds have been from this process, where you find some little sweet spots within a recording that can't be replicated. During sound design, sometimes you don't even realize how perfect a sound was until you changed too many settings and can't go back, so this technique also help preserves this a bit too, although I recommend always saving presets of sounds if you like it, before getting lost over-tweaking settings. Similar to "mudpie" or "monolith" sound design techniques, it should be about experimenting and having fun jamming. Being organized and saving these live recordings lets you remix and chop them up however you want later as well.

RESAMPLING

One of the fastest and most effective ways to make really complex awesome sounds is to record your sound to audio, add FX, and repeat. Iterating this process 1-5 times, manipulating pitch and time, adding unusual filter automations, distortion, chopping up/rearranging, and adding any effect combinations you want, will yield very original and complex sounds. No sound is off-limits, but this process works best on basses, fx sounds, drums and vocals for me. Also consider using multi-FX plugins like Guitar Rig, Serum 2 FX ,Transit 2, Infiltrator 2, ShaperBox 3, Effectrix2, and/or RE4ORM FX (free) to quickly add several effects and movement all at once, tweaking presets or building your own for all sorts of happy accidents to resample.

ETHEREAL DELAY + REVERB

One of my favorite FX combinations is a nice delay and reverb, followed by some light to heavy compression. I love Deelay (free) and sometimes with a saturator thrown in somewhere, as you can play around with the FX order for different moods and tones. I usually stick to quarter note or dotted 8th note delays, with long decays on the reverb as well. This combo is incredible on vocals, anything melodic, or even fx and transition fx, bringing magic and a larger-than-life feeling to anything.



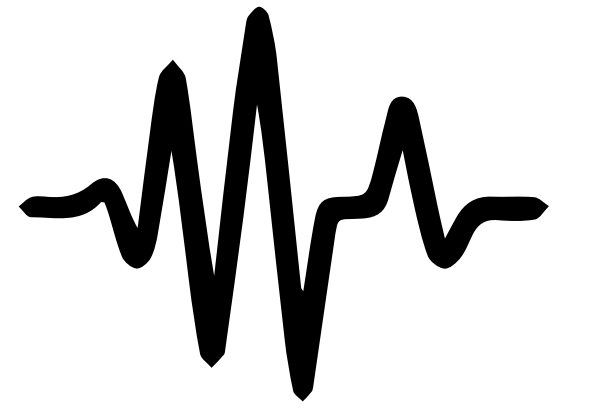
Deelay + Airwindows Galactic in combination makes a wonderful ethereal, lush atmosphere.

QUIET BUT COMPRESSED

A fun technique is to play a sound quietly, either in real life or by lowering the MIDI velocity (for velocity-sensitive instruments with a dynamic response), then boosting the signal like crazy with extra intense compression and/or saturation. This creates an otherwise quiet signal at the forefront, with all its imperfections & noise, like ASMR but for any sound, revealing otherwise unheard details when done right.



A few methods to reduce the velocity in FL Studio and Ableton, either by clamping down incoming MIDI velocity before it's recorded (if you're playing a MIDI keyboard) or by scaling velocity down to low levels (5-40%)



SOUND DESIGN FX TECHNIQUES

Most of my process involves intuitive “following the feeling” on an emotion/mood I’m feeling as opposed to step-by-step methods, so these techniques are more generalized approaches on how I go about processing different types of sounds. Sometimes no FX are needed when you curate the right source sound, but the right FX will be additional complexity & interesting ear candy.

MELODIC SYNTHS AND INSTRUMENTS PROCESSING

Add to the beauty and space of the sound, usually with delays, reverbs, saturation, panning and compression. The goal is to make the sound feel unique and have its own character. Decide how focused in the mix it should be, which will help you in deciding what effects to use, and how wide or dry the sound should feel. Try shaping it with mid/side EQ to feel big both in headphones and on a phone too.

DRUM PROCESSING

Whether it’s snares, drum breaks, or kicks, EQ and saturation are your friends here. Compressors with fast attacks (10-50ms) blended with the dry signal can be used as transient shapers, keeping them punchy and dynamic. Test out bandpass filters /low pass filters in combination with analog-style distortion for pleasant harmonics. Fast stereo effects like delays and reverbs, at low mix ratios followed by overcompression can give the drums a very unique character. Don’t force sounds to fit; if all the effects you add aren’t working, try retuning/changing the drum’s pitch, or spend a little longer choosing a new sample to use and save yourself time in the long run.

BASS PROCESSING

EQ, saturation, and way too much distortion and compression are always my favorites. Push various settings and EQ bands to their extremes before a distortion plugin, and see how changing the EQ affects the distortion. Tame the high frequencies after distortion / compression with an EQ, then add airwindows silhouette (free) or ableton’s Erosion or a bitcrusher to reintroduce new textured high end. Play with plugin order, add random FX like phasers, flangers, anything unconventional to add movement. Don’t be afraid to automate anything and everything if it sounds cool.

HI HAT PROCESSING

Keep it minimal and simple. Saturation, EQ, and subtle stereo flanger and panning effects can make a hi hat stand out and feel full in headphones. Cut out unneeded low frequencies, and watch out for too sharp of high frequencies, taming them with sharp EQ bands. Play with delays and tempo-synced effects, like the Tal Filter 2 volume envelope or FL Studio’s Gross Beat, carving new rhythms and dynamics into more static loops. Like basically everything, bandpass filters + saturation can sound amazing here too. Adjusting the pitch/speed, like all drum sounds, can really make a sound fit better without FX too, and you can even use frequency shifters to adjust pitch instead of playback speed/warping.

FX PROCESSING

Basically always add reverb, compression, and EQ, giving the sounds a big space. Saturation and 1/4 or 1/2 note delays work great, and once you make a cool chain of FX try a bunch of different sounds through it, which can help build a world of sonic textures and keep a track interesting but cohesive. Compression at the end of the chain can make sounds very bold and in your face, so I like that in combination with volume automation after the compressor, so sounds can decay or turn on and off in more of a controlled way. Don’t be afraid to get weird with it using frequency shifters, melodic resonators, and weird delays (like my DR V79 plugin) or other granular FX.

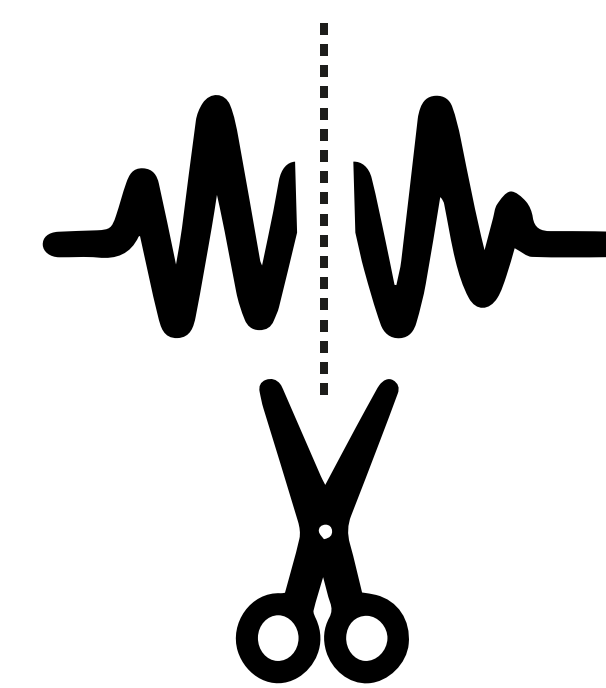
RECOMMENDED FREE SYNTH & SAMPLER PLUGINS (FOR WINDOWS & MAC)

Tyrell N6 by u-he
Vital by Matt Tytel
Decent Sampler by Decent Samples
LABS by Spitfire Audio
Synth1 by Daichi Laboratory

RECOMMENDED PAID SYNTH & SAMPLER PLUGINS (FOR WINDOWS & MAC)

Serum 2 by Xfer Records
Massive by Native Instruments
FM8 by Native Instruments
DR Sketchbook v2 by Dead Robot
Spire by Reveal Sound
JP6K by Adam Szabo

CREATIVE SAMPLING & REVERSE ENGINEERING



Collect, chop, resample, and transform sounds from anywhere until they feel completely your own

FINDING SAMPLES

If you can save it as an audio file, it can be used creatively! The first approach is to make them yourself, either through sound design or live recordings. You can easily use the built-in audio recorder app on your phone from anywhere, taking personal moments from your life and capturing them as audio files out in the real world as soon as the creative spark hits. [Freesound.org](https://freesound.org) is an incredible resource for all types of free samples, as well as searching for old movies and audio on the Internet Archive. ‘YouTube crate-digging,’ which is what I call finding channels that upload old vinyl records and ripping them with [soundflower](https://soundflower.com) or cobalt.tools, is super fun too. I also have over 4GB of all types of totally free samples I created on my site! If you are sampling anything copyrighted, please make sure to completely edit the samples in an unrecognizable way to make them your own.

Sampling and manipulating audio is one of my all-time favorite ways to express myself. Taking a sound I love, and completely transforming it into something entirely new & fitting a new context, breathes new life into the sound. Here are 4 of my favorite techniques for reworking and making audio samples your own.

1. REVERSE EVERYTHING

A simple but often forgotten effect, reversing sounds can quickly make them sound so professional, interesting, and flow between different sections. Anything can be reversed, but some of my favorite sounds to reverse are vocals, guitars, sustained piano chords, anything plucked, crash cymbals, synths, and sound effects. Also try playing with reverse delay effects, like the “Pure Rev” mode in the free Deelay vst, or granular delays for even more ear candy.



A piano loop + the same sample reversed

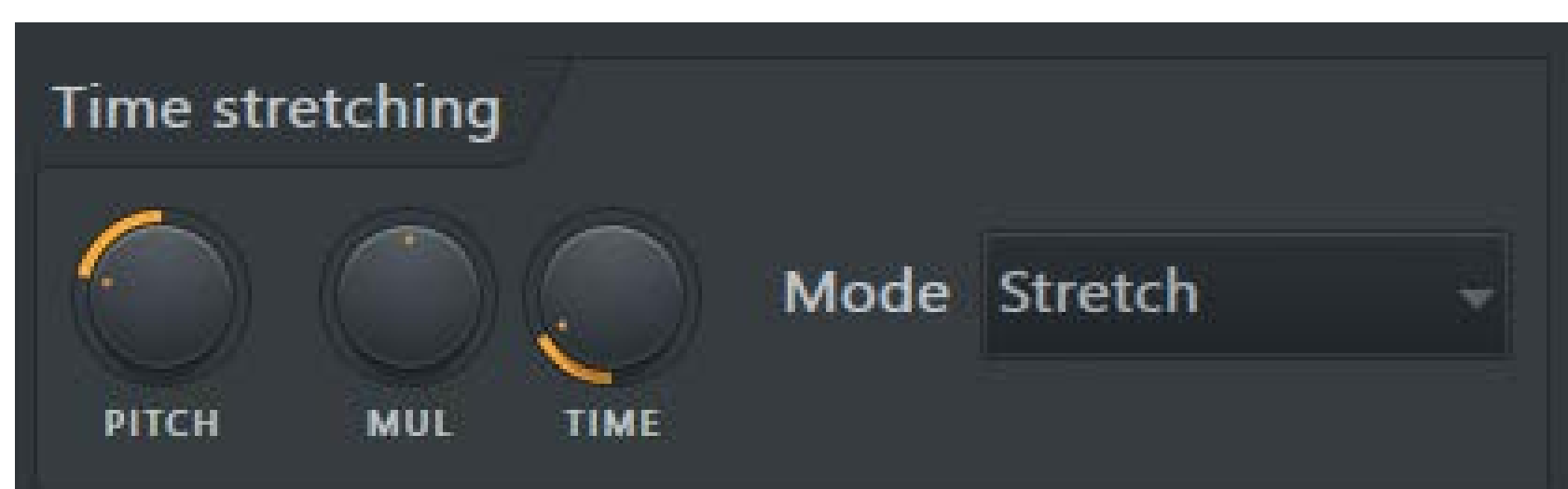
Pro Tip: compress a piano tail, letting it sustain for a while, then reverse that



A snare drum + the same sample reversed

2. PITCH IT DOWN

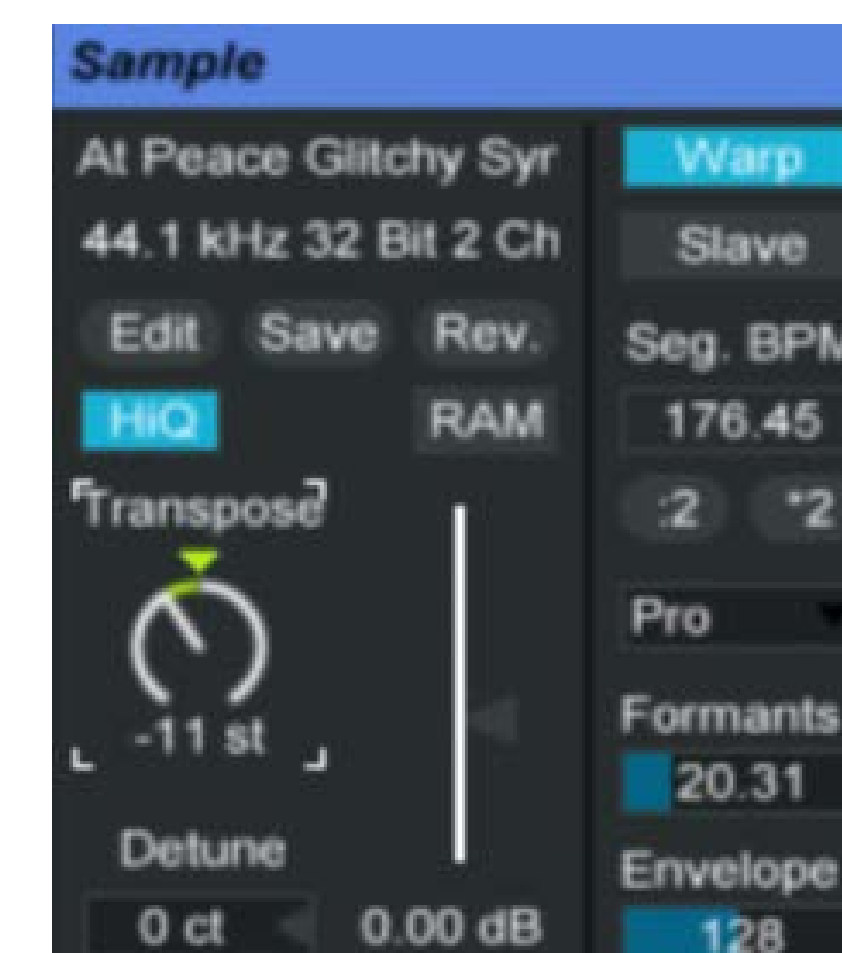
Resampling audio to play at a slower speed, or at the same speed but pitched down, is something I can’t fully explain, but it just sounds SO good. My go-to methods are the FL Studio “Stretch” mode in the sampler, Ableton’s Complex Pro stretch mode, or simply playing the original audio back at a slower speed with a resample mode, often times playing the sample in a MIDI sampler. This can create an emotional, beautiful lofi nostalgic tone, and some of my favorite sounds to slow down or pitch down are pianos, vocals, drum breaks, guitars, bird sounds, and high-frequency rich sounds, like granular glitches or weird experimental textures.



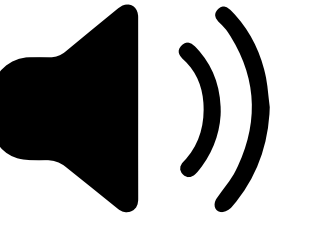
FL Studio’s “Stretch” mode is one of my all time favorites



Not often discussed, FL Studio’s “Time Stretch/Pitch Shift” effect within Edison is super powerful, with complex pitch and formant settings to manipulate

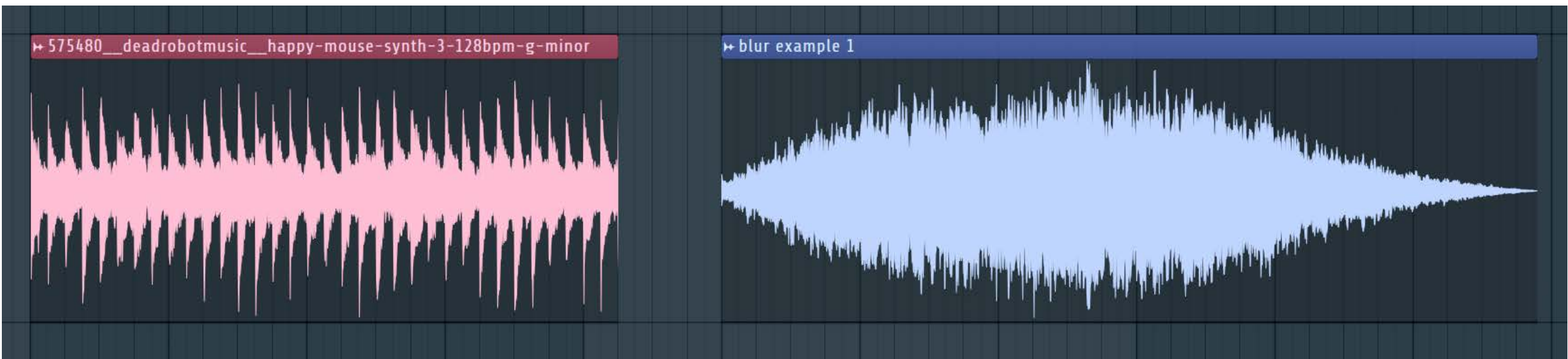


One of Ableton’s many great warping modes “Complex Pro”



3. ETHEREAL BLUR

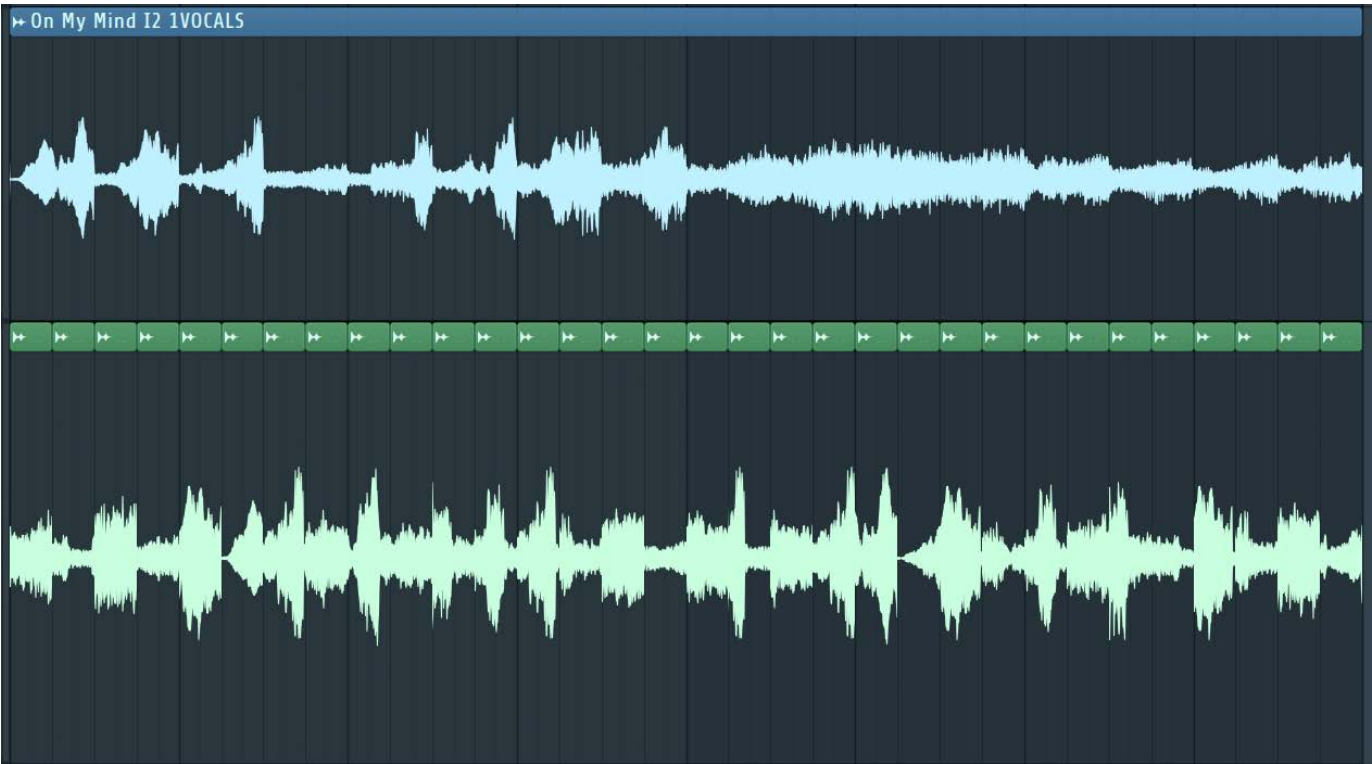
This is one of my favorite techniques, which can be done many different ways with many different plugins, but essentially, all you are doing is taking a sound (usually a melodic sound like vocal, synth, piano, guitar, etc) and drenching the sound in reverb with a long, sustained decay/tail, then compressing the sound after that. This creates a washed out, blurry, ambient texture from almost any sound, and it can completely morph the sound in a magical way. Don’t be afraid to mess with the pitch of the sample, reversing the original audio, throwing effects before or after the reverb, and more to make it unique too. Notable free plugins I love to use for this are Airwindow’s Galactic 1 reverb, my Ethereal Verb v2 plugin (like the ‘Crystalline’ and ‘Singularity’ convolution modes), Oril River, and the Paulstretch program/plugin.



A plucked synth sound, before (left) and after (right) adding Ethereal Verb 2, Galactic, and compression.

4. CHOP IT UP

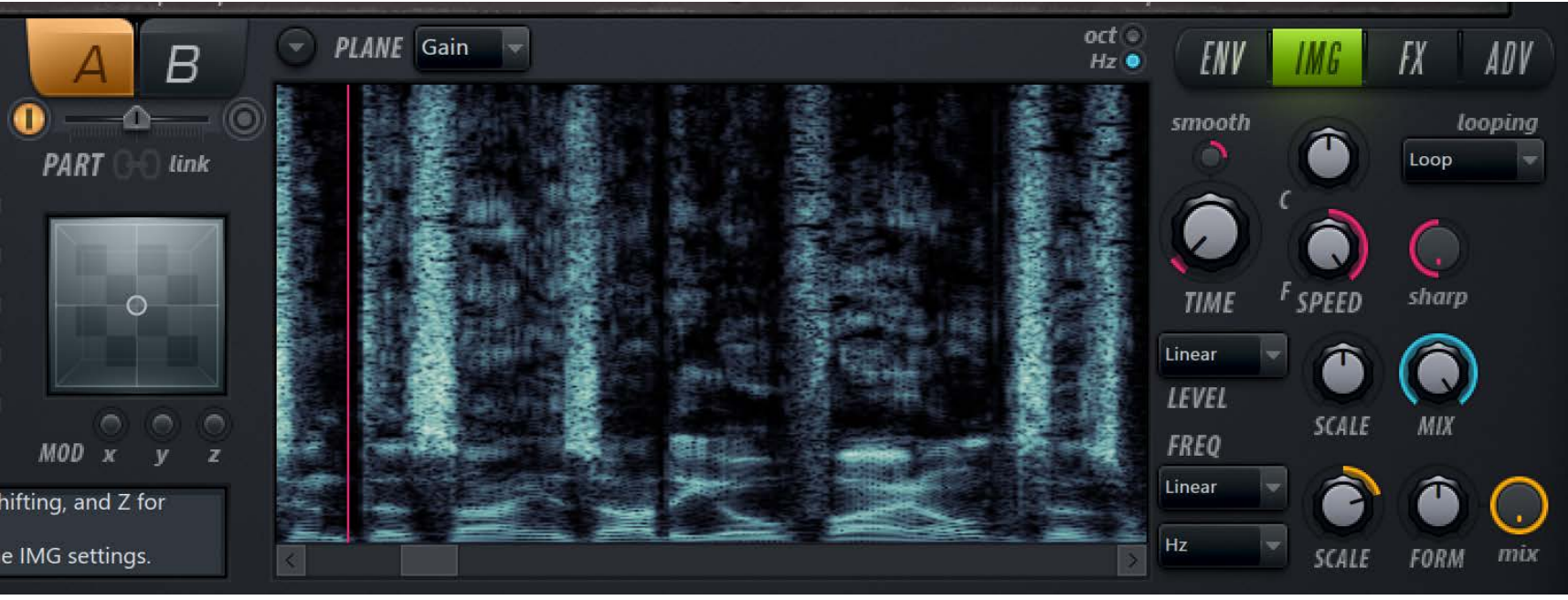
Taking a longer audio clip (like a long live recording, acapella, mudpie, or sample monolith) and chopping it into littler pieces, then arranging those, is one of my favorite ways to flip a sound. A technique I always use is to find a longer audio clip, cut it into little quarter notes, then using FL Studio’s slip tool (or holding ‘Alt’ and grabbing the starting loop point in Ableton’s audio clip view) slide and move through the long sample to find interesting little rhythms & melodies. A more advanced technique is to use a sampler instrument, and automate the sampler’s starting position, (I like to do this in FL’s Harmor or Ableton’s Sampler) which allows you to scrub through a sample using MIDI, allowing for more customization within the sampler, like automating filters,pitch-bending, and more for an even more unique vibe.



Comparing a vocal audio clip (top) to a chopped up version (bottom), using the “Chop - Beat Shuffle” + Slip tool to refine the results in FL S



An Ableton sampler instrument, using an auxiliary envelope peak level to control the sample offset amount



A Harmor resynthesis patch, where the “Image Time Offset” within the Image Resynthesis page acts as the sample playback start and can be automated or mapped to velocity or modulators

REVERSE-ENGINEERING

Reverse-engineering has been a super effective way for me to learn how to create new sounds, especially just starting out in the world of electronic music, with crazy complex basses with a lot of movement. It’s a difficult creative challenge to break down a sound’s fundamental frequency & time components, guess the effects used, and remake it successfully, but I’ll share my main approach.

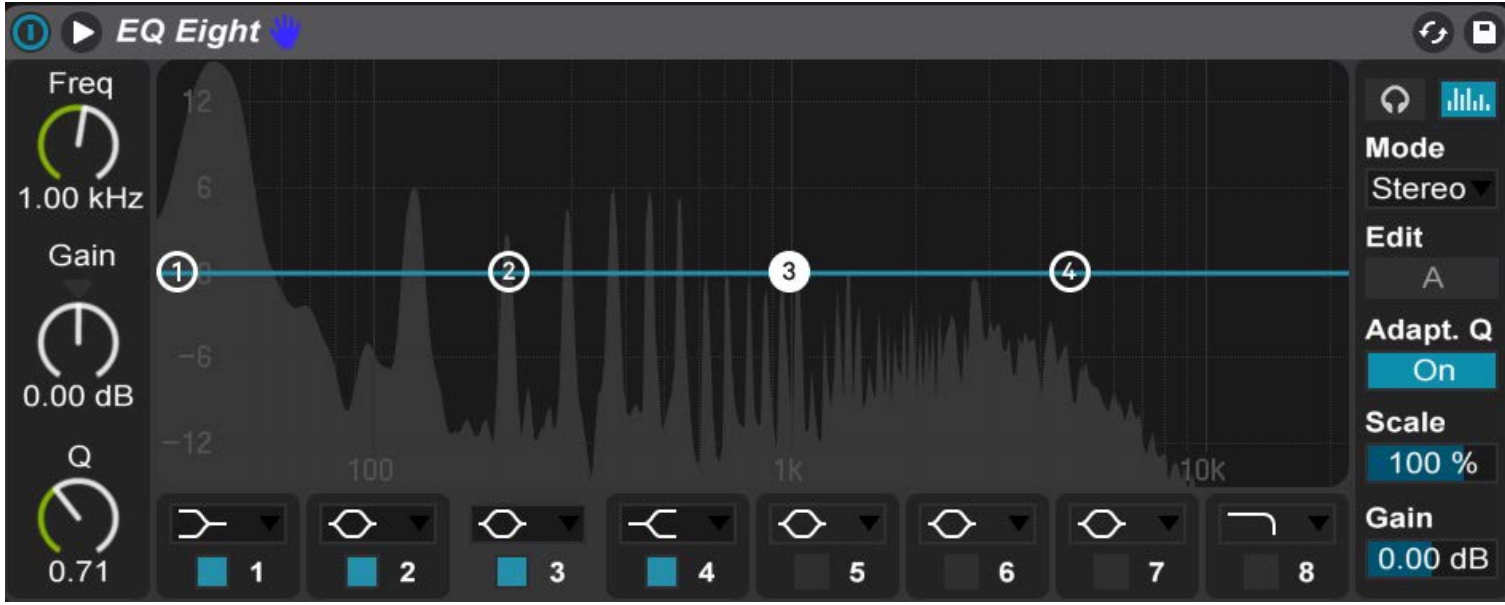
Visual plugins are like a rosetta stone for audio, translating complex signals into visuals in the frequency & time domains, and have been crucial for me to see what I’m hearing effectively, since our eyes are incredible pattern detectors. When analyzing a specific sound, I love to first load the sound into my DAW, loop it, and look at it through different visualizer plugins and EQs, seeing how the spectrum moves and evolves over time, while also playing the sample back slower & faster. The more you look at all different types of sounds through stock EQ’s spectrums, as well as free plugins like SPAN & s(M)exoscope, the more you will see what effects & waveforms do what. Also, thinking about sounds as essentially combinations of a bunch of sine waves , will help you reconstruct many sounds, getting their fundamental frequencies understood, before adding complexity using distortion, filters, and other effects.



Fruity Parametric EQ 2 is my go-to visual aid to learn how a sound is made up, with it’s thin and responsive lines showing how the individual sine waves move and evolve (A low distorted bass is being played here)

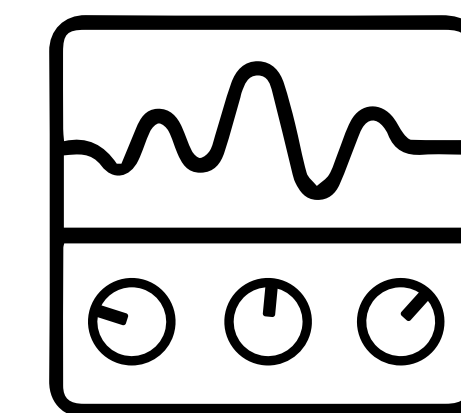


Voxengo SPAN on a screechy, distorted bass sound



Ableton’s EQ Eight visualizer on a distorted bass sound

EFFECTS & PRESETS



Understand what each effect does, how order changes the result, and save FX chains to speed up your process

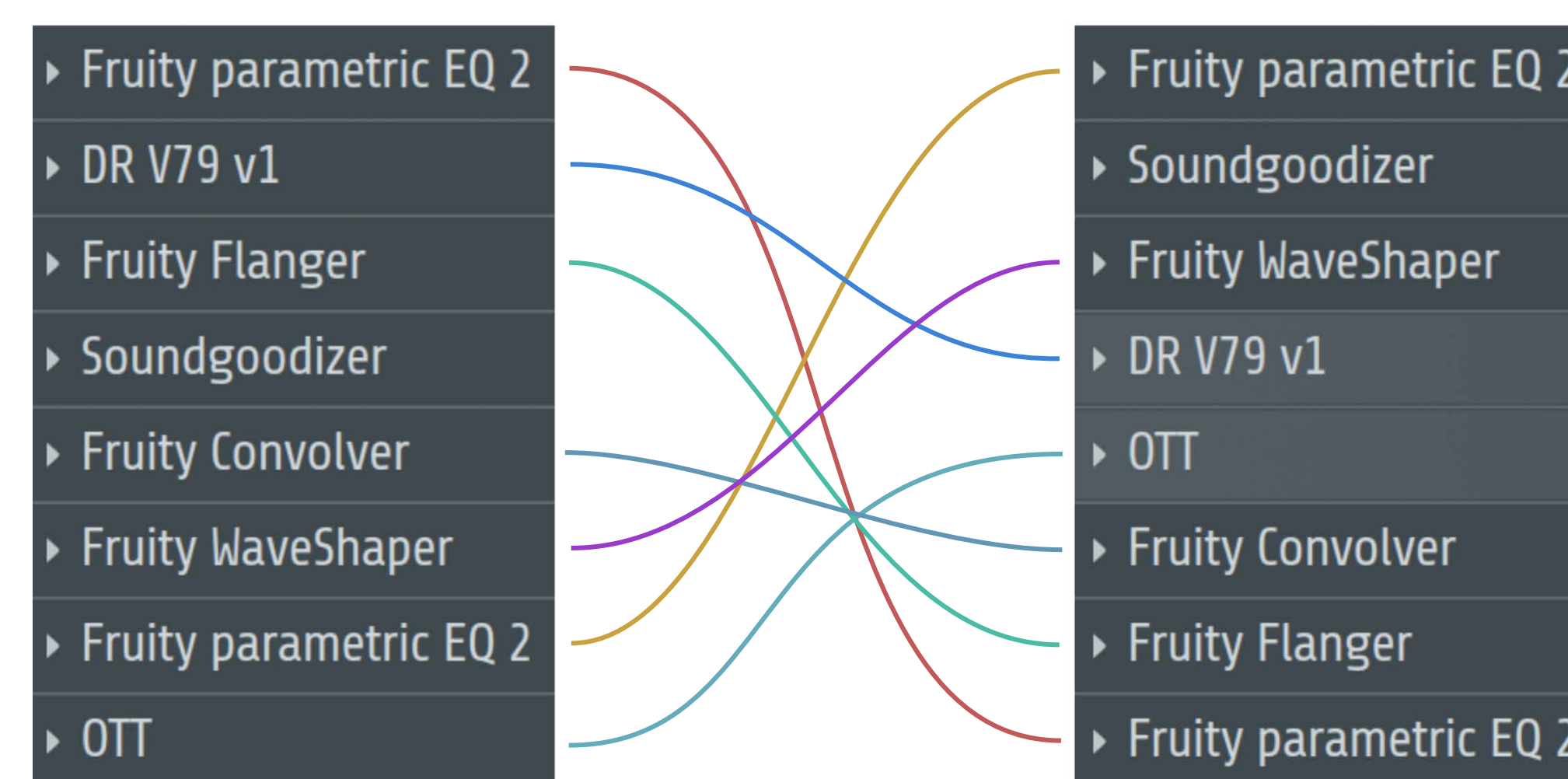
To get good at sound design, try out all the plugins you can, experiment with presets and settings within those plugins, and really take the time to understand the fundamentals of what effects do what. A proper understanding of the plugins means you can easily translate the idea in your head into reality. I personally try to stick to free or stock plugins, which work on both Windows and Mac, so I can use them on my main computer as well as my laptop with ease, but there are so many incredible tools and softwares and effects plugins out there, it's important to take the time to research different effects and what they sound like, utilizing blogs and YouTube to hear audio demos and see if it fits the sound you're going for.

EQ, reverb, delay, and compression are my go-tos for almost every single sound, with each type of sound requiring different flavors and intensities of all of them. There's no hard-set rules when using FX and FX chains, and you can get as detailed or as simple as you'd like, as long as you like how it sounds, that's what is most important. From making electronic music for 15 or more years now, there are certain FX orders & methods I find I'm always using, so I will share a few of my favorites.

EQ is probably my most used effect, adjusting almost every sound subtly or drastically. Usually your DAW's stock EQ, like Parametric EQ 2 or EQ 8 will be all you need for quick fixing and cleanup, but for more advanced EQing I'd recommend ZL Equalizer (free), Pro-Q 4 (paid), or Kirchhoff-EQ (paid) for top tier control and quality. Usually I'll stick to bell filters and slide them around testing which frequencies sound good boosted or cut, really just testing stuff out fast to shape the sound to fit the vibe using my ears more than hard rules. I also love using band pass filters (like the free xbandpass by Airwindows) to give certain sounds a more narrow space within the mix. Also, don't forget saturation, as pairing EQ with subtle waveshaping or more analog-style saturation makes sounds immediately more interesting and full.

For live recordings like vocals and guitar, I usually start with a denoiser, simple EQ, and a utility or tool to automate volume at the very beginning of the effects processing, which allows me to clean up any low frequencies, noise, and other undesirable elements coming from the mic or recording environment. After that usually is compression and more EQ, to make the sound prominent and a bit less dynamic.

A fun trick that I've learned over the years (which interestingly also applies to visual effects and photoshop adjustment layers) is to work backwards when you add new FX to your chain. For example, let's say you threw a crazy insane distortion FX like the free "LePhonk" plugin on your bass track, and now you want to add an EQ. Instead of adding the EQ after the distortion, try putting it before the distortion, so it shapes the signal flowing into the distortion. I've found working backwards like this can make really unique and interesting results, especially when adding stereo effects like reverbs, moving LFO filters, mid/side EQ, granular effects, and more. Not being insanely attached to the order or "right" way of doing things allows for more happy-accidents and playful novelty, and at the end of the day, if it sounds good to you then that is what matters!



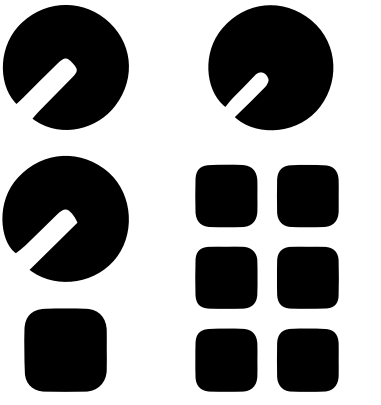
Don't be afraid to switch up the effects chain order, it can give you completely different, unique, often unexpected and cool results

Another effect I use all the time is overcompression. Essentially, I love to add a compressor like OTT, or Ohmicide with the "Shape" all the way to the left (both will do upwards compression, increasing the loudness of quiet sounds). When you absolutely destroy and squish a sound, it can bring out all sorts of interesting characteristics, and when you add effects before this, even at super low dry/wet mix ratios, you get extra interesting sounds like artifacts (filter zipper noise, weird clicks, aliasing, bitcrushed sounds) or ducking effects, (reverbs or delays being completely inaudible when the signal is playing, but when the signal stops, you hear all the tails extended). Beyond compression, its also fun to push plugins past their normal settings, or have several instances of them duplicated in a row, increasing the intensity of the effect, which can often yield interesting unique results, if you make sure not to destroy your ears from it getting too loud (sometimes putting a hard clipper or limiter at the end just in case).



An example plugin chain for overcompression, with 3 different types of compression after a super quiet reverb (Oril River); Ohmicide (distortion off, with the "Shape" parameter of 2 bands around 30% Phat), DR 4 Band Compressor with moderately intense settings, and the classic Ableton OTT multiband compression preset, with the "Amount" adjusted to 63% and "Time" adjusted to 141% to be more subtle. This keeps the original signal sounding clean and compressed, and only when the dry signal decays will you hear the reverb tail bloom and get louder, creating an interesting almost ducking-like effect.

I love using this method, using different reverbs, compressors, and different source sounds (basses, vocal chops, animal sounds, percussion, etc) then resampling the results for further editing and tweaking.



RECOMMENDED FREE FX PLUGINS (FOR WINDOWS & MAC)

Airwindows Consolidated

Deelay

Oril River

LePhonk by Xynth

Venn Audio Free Suite

DR Ethereal Verb v2

MFreeFXBundle

Codec by Lese Audio

PaulXStretch

Kilohearts Essentials

ZL Equalizer

Accusonus ERA 6 Bundle

CamelCrusher

OTT

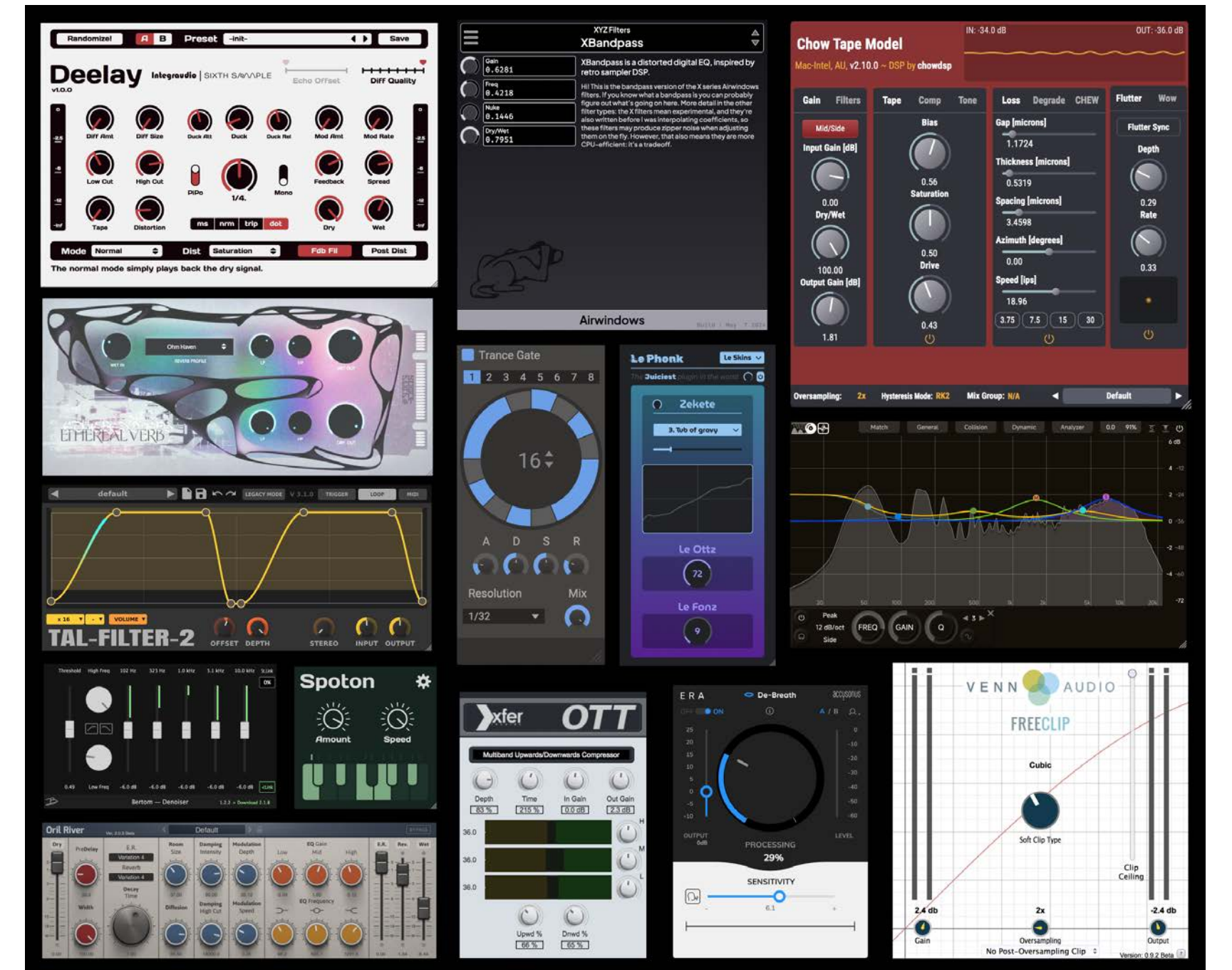
Bertom Denoiser

Ohmicide

Spoton

CHOWTape Model

TAL Filter 2



Saving presets of your favorite effects chains and instruments is such an important aspect of developing your own unique sound, because it allows to you quickly recall work you’ve already done, and no one else will have the exact same settings or plugin order as you because you made it yourself. Over time, once you have saved many presets, you will start to intuitively gravitate towards your go-to effects chains and presets, and it allows you to get the idea in your head out that much quicker, not having to worry about overthinking that often messy translation from idea to reality.

I have hundreds of effects chains saved in both Ableton and FL Studio, covering all styles of sounds I love, like crazy distorted reese basses, lofi synths, ambient background vocals, hi-hat stereo effects, ethereal guitar tones, and compressed pianos, and more. Having this large selection of homemade starting points makes it so fast and fun to just start jamming and improvising on instruments, allowing for playful experimentation. Maybe a guitar sounds amazing in a vocal FX chain, or maybe a real flute recording sounds incredible in a super-compressed 80’s inspired pluck synth chain. Having many to choose from allows you to really experiment and get back to having fun instead of diving into the tedious details of plugin settings, although personally I really do love that aspect (because I’m a big art nerd at heart).

Various example FL Studio FX chain presets I use (signal-flow goes from top to bottom)



one of my go-to vocal presets, with autotune, compression, some stereo effects, then more compression and EQ



A nice stereo guitar preset, washed with extra reverb and compression. McRocklin and Guitar Rig combination allows for insane variations from clean to insanely crunched up tones

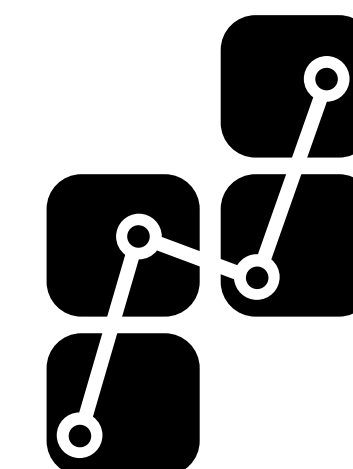


An ethereal synth preset, with delay and reverb, and an LFO controlling the Vinyl Strip plugin’s wow & flutter amount adding complexity to the warbling old vinyl effect



A sub bass preset, with a bunch of lowpass EQ, followed by saturation, more low pass filters, then heavy compression, for a super solid low sine wave with nice more subtle harmonics

ARRANGEMENT & AUTOMATION



Hand-automate levels and FX; contrast, switchups,
& flow keep listeners engaged

AUTOMATE BY HAND

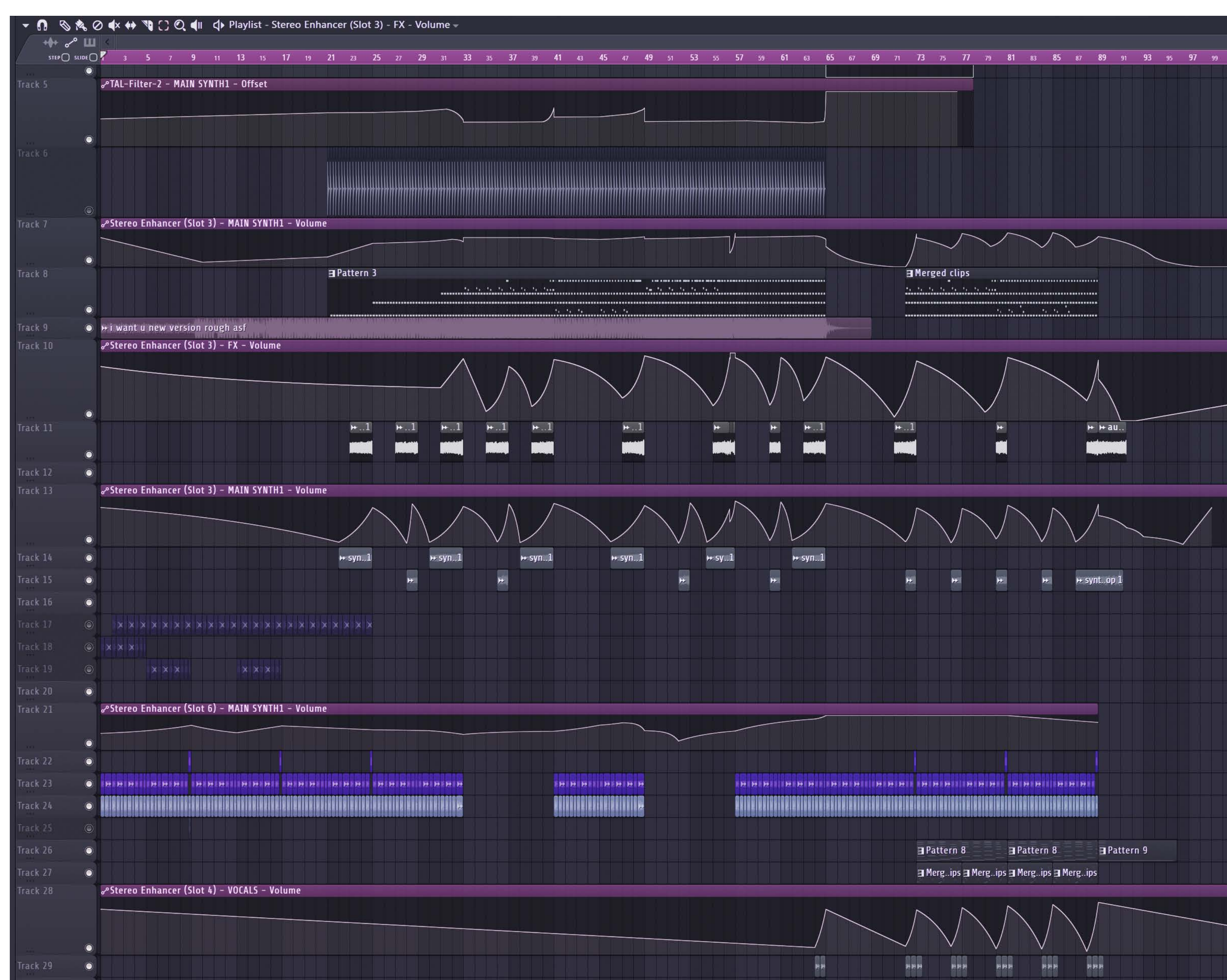
If you really want to infuse your soul and emotion into the work, automate volume and effects by hand. Doing both 3D art and animation as well as motion graphics, I learned there is something very similar between them and making music. The word “Animation” means “to give spirit and vigor to” something, and I view automation the same way. You can enliven anything by automating a volume utility, making a normally more digital sound more imperfect and flowy. Doing this will help elements lead into to new sections, add organic movement, and make your layers in your song feel more connected, like they are working together. This also gives you more precise control on exactly how loud or focused certain sonic layers are at certain times. It may take a bit more work, but the attention to detail and emotion and love infused into the work will really make it worth it.

CALL + RESPONSE

Similar to how automating by hand can improve interest and connect sections together, arranging call and responses from different synths and sounds can make a song really interesting and fun. Having different sounds in communication with each other, often times using contrasting sounds (like a low bass call followed by a high pitched response) makes a very unique and ear-catching section. For example, in the 2nd drop of my song “Overgrowth”, and in the drop of my song “Beyond The Void,” I use this call + response technique, in combination with the by-hand automation, to create complex flowing arrangements of different sounds, contrasting more melodic pieces with bass-y synth sounds.

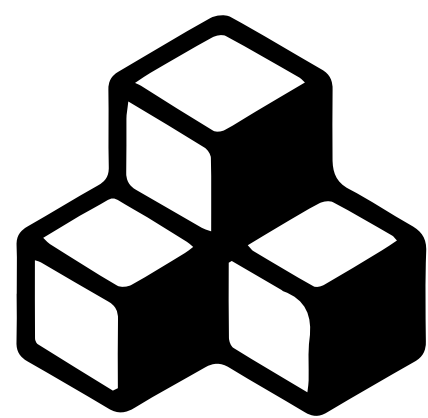
SONG STRUCTURE

There are infinite ways to arrange a song, and most of it should be a feeling on how each section fits together. You can load in your favorite songs, or multiple songs, into your DAW, to map and see visually how they are arranged, which is a great way to learn, but for me, I’d rather follow my intuition on it. Maybe it’s a slowly evolving melodic trance-like song, which grows and morphs on top of a sonic melody bed, or maybe it’s a “Build-Drop-Breakdown-Build-Drop-Outro” dance music DJ-friendly festival song, where each section is 8-16 bars. Don’t just follow trends of what is cool right now in the culture, experiment, try new things , and try new methods to arrange your song that no one has ever done before.



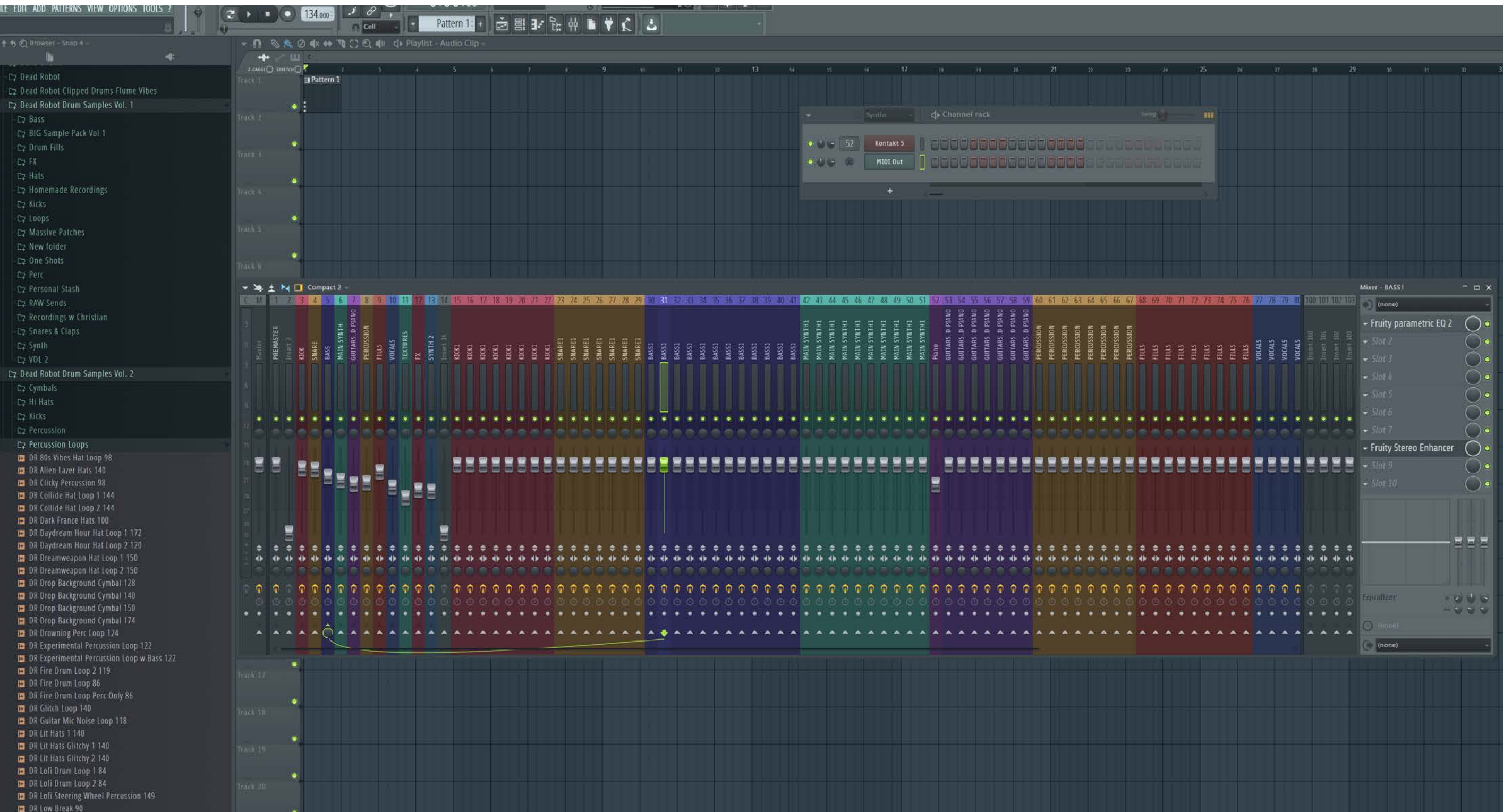
An FL Studio project file showcasing by-hand automations, turning off automation quantizing to draw organic dynamic layers

TEMPLATE BUILDING

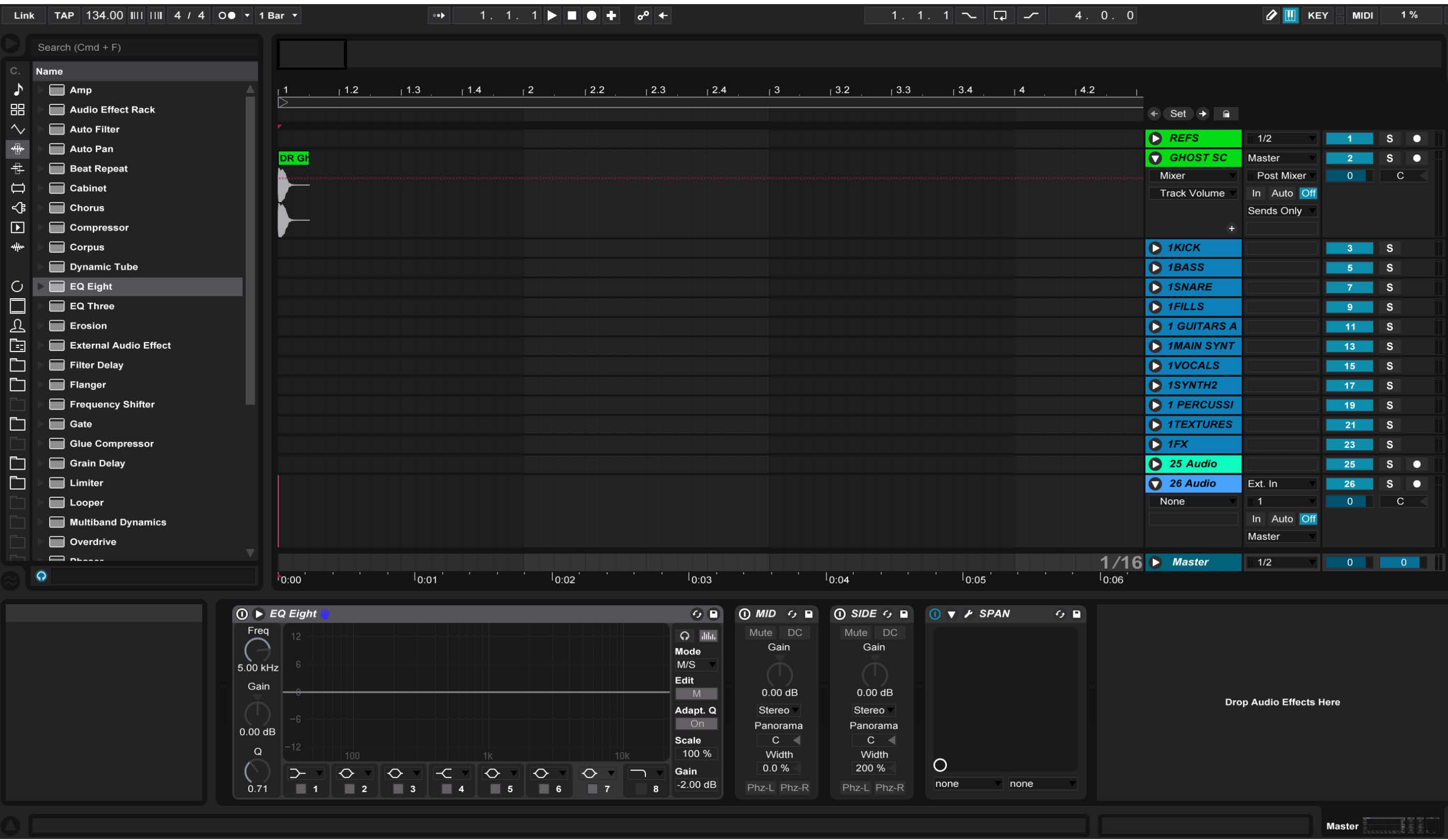


Organize your startup project with grouped tracks, fx, and routing to speed up your workflow

Building your own custom startup template is an efficient tool to help sketch and build new songs super fast. I love creating already organized groups (Kick, Snare, Bass, Synth, Percussion, FX, etc) so any sound I throw in will be organized and easy to export out later. I also love to throw defaulted stock EQs on the individual tracks as well as a sidechain, so I can really quickly subtly or intensely shape sounds as soon as they're in the project, getting them to fit in the demo really fast. I try not to add too much into the template, so it still loads quickly and is low on CPU usage, keeping it like a loose framework to build ideas really fast. You can really add anything you'd like into your template, however. For example, I have a “Cinematic Strings” template project, which contains multiple string sampler layers, all controlled by the same “MIDI Out” plugin, with each string sampler instrument having its own mixer effects, reverb, volume automations, etc, so I can quickly write beautiful string arrangements for any new song. Templates like these can be for basses, vocal engineering, mixing, sound design, anything you'd like really. Like effects groups and presets, they can help you to develop your own signature sound across all your songs, but I'd personally recommend not over-relying on them so your music doesn't sound boring and formulaic, your art should be unique and human and not just the same exact sounds over and over. You're not an AI, but saving time and making things efficient is smart, because the faster you can sketch out an idea, the less time you have to waste translating your vision.

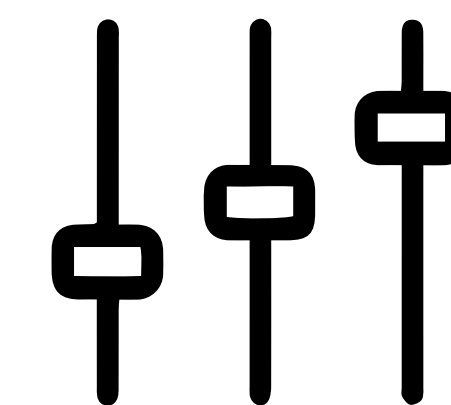


My 2025 FL Studio starting template. All the mixer tracks are routed to 11 groups, and almost every mixer track contains an initialized parametric EQ 2, and a stereo enhancer for sidechain (Fruity Envelope Controller with a MIDI trigger) I don't have default synths saved into the preset (except for one piano instrument I love), so it loads quickly, and is a blank canvas to sketch and try new things.



My 2025 Ableton starting template. Essentially the exact same as my FL template, with organized groups, a ghost sidechain audio trigger (usually sent to a Glue Compressor) and SPAN on the master channel. I like to keep a few empty audio tracks to quickly throw audio files into new projects. I also always use MIDI tracks with Sampler on them to get awesome uniquely edited samples fast, but it's so quick to add instruments I never save it into the template

MIXING & MASTERING



Focus on what matters most, adjust volumes,
and reference professional mixes

MY APPROACH & METHODOLOGY

The mixing and mastering stage of a song is the final part of the song creation process, where you transform your full song idea into a complete, finished, piece of art: one that is focused and balanced, and sounds good in theory anywhere someone would choose to listen. When you're working with digital constraints, such as a 0dB maximum ceiling, that limitation can feel challenging to get every element of your song to fit well with each other, and also be front-and-center for the listener. A finished song file is like a box or 3D cube, and you can only fit so many things in the box at one time, so you have to be clever with how you write, organize, arrange, and decide which parts are loud at what times. This constraint can be very complex and at times frustrating, because there are no hard rules on what is allowed, and depending on the genre of song, may need to loosely follow cultural trends or psycho-acoustic patterns our ears are familiar with. Showing up often and discernment are the 2 real keys to really improving and getting better at mixing and mastering, or anything in life really. The more you work at it and try the better you will get over time, pick up new tricks and techniques to make songs sound great, competitive, and match your taste, but it really does take time. In my life I've probably mixed and mastered hundreds of songs, probably closer to a thousand at this point. The more you try, the closer to hitting the target you will get. I also take a lot of time to really listen and analyze my favorite songs, listening and looking at them through high quality spectrum analyzers to understand complex patterns and try to tune my ears to my own taste on what I love about certain mixes.

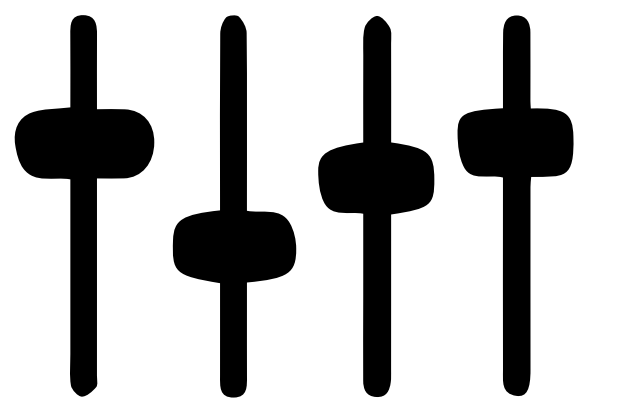
It may sound like an oversimplification, but most of mixing and mastering is just volume control when you really think about it. The mix is about the relationship between all the elements, with everything working together to compliment each other and build a cohesive little world for the listener to inhabit. The mastering is more of the glue and texture and loudness sticking and shaping everything together however the song or album needs to feel consistent. Luckily for you, we as listeners are very accepting of the sonic palette of a song, so the more you can get a song's aesthetic and feel from the sound selection and effects, before the mixing process, the better. Keeping the original spirit and feel of the original demo I think is super important too, as you can very easily over-do it by over-compressing, over-analyzing, over-mixing and overthinking a mix. Getting too lost in the rational part of your brain during this time can be detrimental to the essence and flow of the original idea, so try to remember that original spark, subtly adjusting EQs and volumes to enhance that, not just trying make it sound like someone else's idea. Let the song idea be what it is. Very often I will take a lot of time to get the mix and master right on a song, sometimes it'll take months or years from when I first made the original mix of the idea. Giving yourself time to learn new techniques, refresh your ears, be objective, and patient very often yields much better results for me. It's almost like you come back to the song with a completely new perspective, and see and hear things you didn't before, as you were too close to the initial idea.

Mixing & mastering tends to blur together for me, especially because the process of "mastering" is mostly adding loudness in various ways, (such as limiting, saturation, and multiband compression), which changes the perceptual loudness of previously quieter elements, and that is why my mixing and mastering approach is iterative and tends to feed back into itself. If I add 4dB of limiting on the master, I may have to lower something in the mix so it doesn't become too loud, or maybe I'll have to automate the volume of certain sections, like breakdowns, to be quieter by a few dB so that the drop can be louder. Stem mixing and mastering is my favorite approach for this reason, as it allows me the maximum amount of control over each element when finalizing a song. Essentially, stem mixing and mastering is just exporting organized, grouped parts of your song, then mastering and mixing those groups together. Imagine your song has 100 layers, but when you group everything, there are only 3-11 groups. Reducing the complexity is much less overwhelming for me and actually allows me to get things done and make decisions, and when you have bounced WAV files of the groups, it's very visual and you can much easier see when things are not balanced or too quiet or too loud. It also allows me to lower CPU use since I use so many plugins and FX.

My rough mixing and mastering workflow is like this:

1. Make a song with all the elements you can think of in it with no FX on the master channel
2. Export that project file to an organized folder of individual wav files (NOT normalized so that it sounds identical to your first version)
3. Drag all those wav files into a new project, organize/group them and start building your first real mix
4. Keep polishing that project as much as you can until you can't think of anything else to change about it
5. Turn off any Master FX, then export each grouped stem individually, then save your master FX chain as a preset to open later
6. Drag all those wav files into a new project, add the Master FX chain, then finish your song in this project
7. Export final song from this new project (I call it an "iteration 2" or "i2" mix)

Some people are totally fine mixing and mastering their projects in the original project file which is totally okay too, but this method has worked super well and allowed me to fully finish and release almost 300 original songs, but remember there's no rules! :)



MIXING TECHNIQUES

Remembering that mixing is just adjusting volumes to get a balanced and harmonious relationship between all your sounds, here are some of my favorite methods and tips to get high quality mixes

USE GROUPS

Grouping similar tracks is so crucially helpful for me to get a mix organized and balanced. It helps me reduce complexity when mixing, and once all the elements are organized into groups, you can quickly adjust the groups to get a better mix balance, much faster than sorting through potentially hundreds of layers.

USEFUL FREQUENCY HIERARCHIES

Similar to the above grouping organizational method, I've noticed a trend in analyzing my own mixes and other people's music, where the limitations of a 0dB maximum file means certain elements and frequencies can only be so loud in a mix. From my own data, the lowest frequencies take up the most headroom in a mix, because they are literally the largest and slowest waves, so that means your kicks, basses, and drums/drum fills will take up the most space in your mix. Next are the more midrange sounds, such as guitars, synths, and vocals. Finally, the highest frequencies take up the least amount of space, so things like percussion, textures, and FX will be the quietest sounds, in terms of measured dB. See page 22 for a visual of the average dB levels of over 230 of my song's unmastered stem group dB levels.

MIX THE LOUDEST / MOST IMPORTANT ELEMENTS FIRST

Once you have organized groups set up in your preferred way, the easiest way I start balancing a mix is to solo the vocal group, as well as the drum and bass groups together (Kick, Snare, Percussion, Fills, Bass, and Vocals). With only these essential loudest groups playing, I can really quickly dial in a balanced mix, making sure the relationship between these groups are balanced and work well with each other first. I always have a quick, low CPU mastering chain on during the mix process too, that could be a limiter or a simple hard clipper, just something to hard-cap the peaks of your mix to roughly simulate the loudness, without too much tone or EQ shaping. This helps with the loudest sounds in this stage because you get to more accurately hear how they all glue together with limiting or clipping, and can change your mixing decisions to better reflect the vision you're going for.

CHECK THE MIX IN MONO/SIDE ONLY

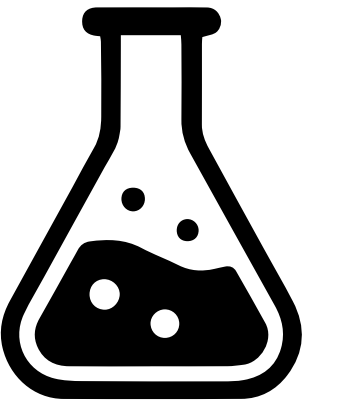
A simple but super effective tool to checking your mix, is to throw a utility on the master channel, only playing mono information or only playing side information (the difference between left and right channels). I use 2 simple ableton utilities: the "Mono" utility has the width at 0%, and the "Side Only" utility has the width at 200%, and the left channel's phase inverted, so that it's playing the sides only, but in mono, so it's less strange sounding on your ears. Other plugins to use are the free ISOL8 plugin or bx_meter's solo options. By soloing these different channels you can help uncover inconsistencies within your mix, like maybe your vocal is too stereo and wide and is getting lost in the mono/center channel. Having your mix sound good in mono is a good way to make the mix more consistent across multiple speakers and systems.

USE AND LEARN FROM REFERENCES

References are crucial for me to learn from, because insanely skilled professionals from around the world have already worked so hard to make a mix and master sound incredible, so you can always learn from that. Purchasing or downloading the highest quality songs in a similar genre to the song or album you're working on, and A/B-ing your mix to that will quickly help you understand what parts of your song are too quiet or EQed strangely. I like to use 5-10 songs, baked into one file, and measure and analyze the average EQ from a variety of similar songs instead of just one. That way, you can use EQ matching tools like CarveEQ, Izotope RX, or Pro Q to measure and determine where your mix/master is different, then go into the elements occupying that frequency range to change it more subtly than a master EQ or something. As mentioned before, visual guides like Vision4x, DR Spec Ref v1, or SPAN can visually show you where your mix needs work when comparing. This will also help with competitive loudness, getting your mix to match how loud it will be compared to others, but I honestly don't overthink this too much. It's really a "use your ears" method for me to make it loud but not squashed, as long as your song is close in terms of RMS and LUFS (my average for multiple albums is -7.23 RMS and -9.2 LUFS).

MID/SIDE EQ IS YOUR FRIEND

Mid/side EQ is one of the fastest ways to get your mix sounding really nice, if you are thoughtful about where and when to use it. I use it all the time, especially on mid-range and bass sounds, and it can really help to glue sounds together and carve out room for other layers to breathe. There are no hard rules about it, and I very often have wide sounding basses, but as long as they also sound good in mono I don't think it's an issue like many engineers say. The best way to use it is to test it out, like any EQing, and adjust the side channel a few dBs with a bell filter, and if it sounds more enjoyable go with that.



MASTERING TECHNIQUES

Remembering that mastering is basically just making a song louder, sonically cohesive, and ready to be delivered to its intended medium, here are a few of my favorite methods to get magical masters

BE SUBTLE

The trick with mastering and finalizing a song is to be subtle, and to only make small, subtle changes to the signal, constantly A/B testing whether your change is beneficial or not. If you're doing EQing, your mid/side bands should probably be in between .1 and 4dB. If you're limiting, one limiter should probably not be doing over 3-5dB of gain reduction. If you're using multiband compression, only compress a few dB for each band, and try mixing in the dry signal in too so it's even more subtle. You should always just be testing little changes, and the more little changes that you add together will add up into a beautiful final song. If you need to make too large of changes, it's probably a mixing issue so go to the mixdown and tweak that.

MULTIBAND COMPRESSION TIPS

Multiband compression is a delicate process during mastering, and like previously stated, it should be subtle but make the song and mix sound better, not worse. I like to have my 4 frequency bands split around 145hz, 518hz, and 4120hz (in Ozone for example) which separates and groups frequencies in a pleasing way to my ears. Usually, the lower the frequency band, the slower the attack and release should be, and the higher the frequency band, the faster it should be. Too slow can get a bit too thumpy and emphasize transients too much, and too fast can cause audible distortion and other issues, so it's about playing with the settings to get a nice balance. I've also noticed that the lower the frequency band, the higher the compression ratio should be, to help tame and control the lower bigger frequencies, with something like a 4:1 - 8:1 ratio even sometimes for the lower bands, and more like 2:1-3:1 for the higher bands. Regarding thresholds and gain reduction, for mastering I always try to only have about 1-3dB of gain reduction max going on per band, and I always adjust the dry/wet mix of the multiband compression to 50%-90%, making the changes very subtle but still helpful for taming dynamic range and adding glue.

EQ TIPS

When it comes to EQ settings, every song of course is different. I like to use 2-3 Mid/Side EQs in my mastering chain, one at the beginning for bigger overall shaping of the mix (still pretty subtle), and one after compression but before the final limiter, for super subtle tweaks (usually 1dB or less per band). You should kind of already know what style and feeling you want the song to be, is it vintage and analog and lofi, punchy and electronic and bright, or poppy and balanced and vocal-focused? Understanding the mood and feel will greatly shape your EQing choices, and for mastering, most of the big decisions should be done in the mixing phase. Focus on de-emphasizing unwanted resonances, bringing out and highlighting the most important elements in the song, and making everything feel balanced and smooth. I usually avoid linear-phase EQ especially for low end, as it causes pre-ringing and I don't like how it sounds, so I prefer natural phase, mix-phase or zero latency EQ modes within Pro Q and Kirchhoff plugins.

DON'T USE LOW CUTS OR HIGH CUTS

Contrary to what many people online always say about "getting more headroom" from your mixdowns by cutting out low frequencies, almost every time I've tried it it's been more detrimental to my master, as the filters themselves introduce phase shifts or ringing, and often leave the bass sounding weak or flat. If you want to cut out low or high frequencies, I'd recommend doing that to individual tracks if they really need it, but it's very OK to have super low frequencies as long as they aren't audibly causing any issues to the sound.

SAVE & REUSE YOUR MASTER EFFECTS CHAINS

Whenever you have fully finished a song, group all your master effects into a preset, and save that. You already worked hard to make that preset, so saving it to tweak and reuse later will save you a lot of time in the future, assuming you're creating or mixing/mastering a similar genre of music. Of course every new song is different, especially in the mixing and mastering stages, but having a bunch of preset starting points to choose from is insanely helpful. I have over 200 presets I've made, so whenever I'm trying to start finalizing and mastering a song, I just throw one on, adjust all the EQ settings, compression, and limiting amount, and it's a quick and quality master starting point. I released a plugin called DR Neural Finalizer v1, in which I used neural networks to accurately capture 16 of my mastering effects chains, and baked them into one VST plugin, to help with this exact workflow. Of course, you can download my and other people's presets too for whatever DAW or plugins you love to use, but I'd highly recommend building your own so you understand exactly what they are doing and design your own style and taste.

STAYING ORGANIZED & FUTURE-PROOF



Create a hierarchy of organized folders, backup your projects, and archive them as .wav files

ORGANIZED HIERARCHIES

Staying organized is SO so helpful to working efficiently, being able to easily go back to old ideas, share ideas, and make sure your projects work in the future. Below is a rough diagram of how I try to organize projects, starting with an overall “Artist Name” for the main overarching folder. Inside the “Artist Name” folder next is the “Projects” folder, the “Demos” folder, and the “Final Stems” folder. Inside the “Projects” folder are your ableton or FL Studio or DAW projects, as well as a bounce of the most recent demo of that project, so when you’re going back to listen to demos you don’t have to open the project file which can be slow. Also, these are labeled with tempo information and version numbers to stay organized, and optionally you can add the key of the song too (like C# major or something). Next, the “Demos” folder is the archival backup of the projects, meaning that you bounce all the stems from your project demo into high quality 32 bit wav files, then use these wavs to make your final mix and master. This folder is so that even if you lost your plugins, DAW, or computer, you can perfectly reopen the project to keep working on it and finish it fully, helping to better time-proof things. Next up is the “Final Stems” folder, which is very similar to the “Demos” conceptually, but this folder is archiving your fully finished mix/master of your song. Once you are finished with your song (doing a stem master in this case), turn off the master FX, and individually export each mix group as a 32 bit file. I also save the master effect chain as a preset in this folder too, so I can reopen a project in the future, assuming I have all the same plugins installed.

This workflow makes it straightforward and easy to backup files too, as you can just backup the “Artist Name” folder and mostly everything you need to finish your songs will be included. This of course doesn’t include your “Samples” folder, which should also be organized similarly so it’s easy to back up too. People say to backup your files to at least 3 different locations or hard drives, so ensure you don’t lose your years and years of work, and I think that’s wise too. I’d also highly recommend not really moving or renaming samples after they have been saved to your computer, so your project files can always locate the samples you throw into your projects easily.

ARTIST NAME

PROJECTS

— SONG NAME + BPM + VERSION #.FLP

— SONG NAME + BPM + VERSION #.WAV

DEMOS

SONG NAME STEMS + BPM

— INDIVIDUAL 32 BIT .WAVS OF PROJECT

FINAL STEMS

SONG NAME FINAL STEMS + BPM

— UNMASTERED GROUP STEMS 32 BIT .WAV

— MASTER CHAIN AUDIO EFFECT RACK PRESET

EXPORTING & STEMS



Use 32 bit wavs with no effects
on the master channel

This exporting stage is honestly pretty simple, and while having a deeper technical knowledge is very helpful, if you just use these settings your exported files will be super high quality and very useful in every DAW + DJing setup.

ARCHIVAL WAV FILES

WAV files which will be used for mixing and mastering, and perfectly archiving project files

— 32 BIT FLOAT .WAV

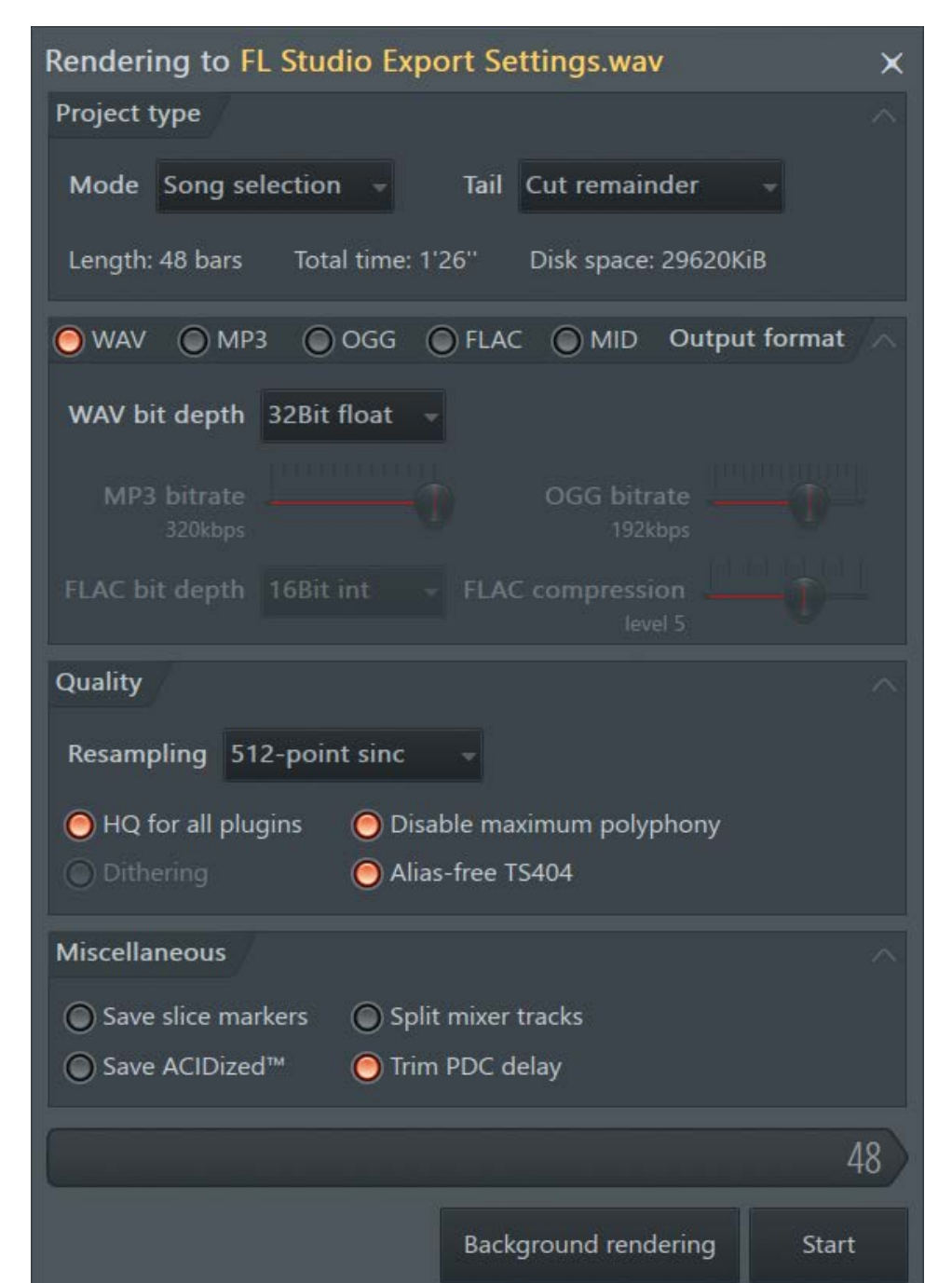
You don't have to worry about any tracks going over 0dB in 32 bit float

— 44.1 KHZ OR 48KHZ SAMPLE RATE

Whatever your original project was recorded and created at

— NO NORMALIZATION

This preserves the mix exactly how you had it in the project file



FL Studio export settings for archiving

DELIVERABLE WAV FILES

WAV files which will be uploaded to streaming services, usually mastered or final mixes of songs

— 24 BIT .WAV

Very high quality format

— 44.1 KHZ OR 48KHZ SAMPLE RATE

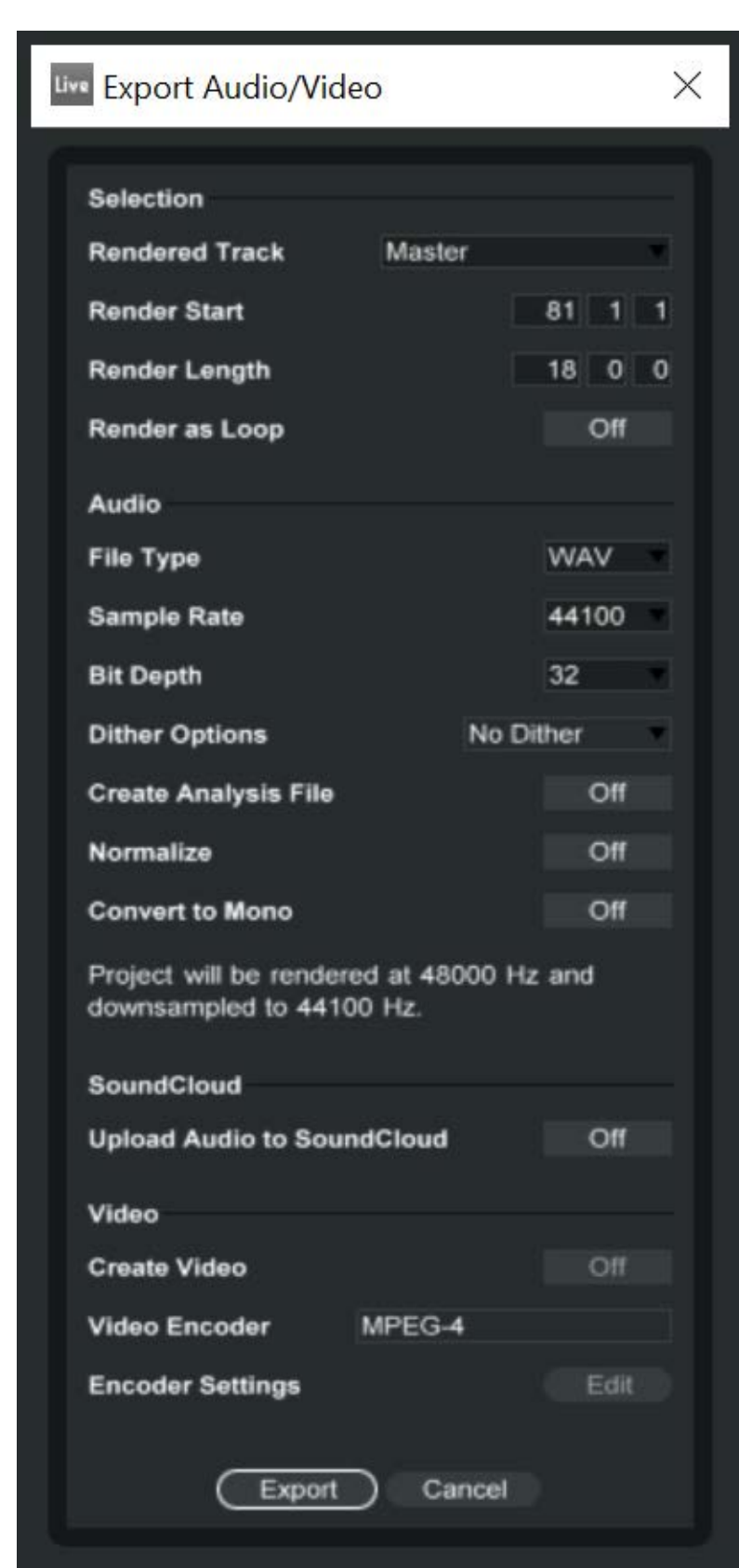
Whatever your original project was recorded and created at

— NORMALIZED TO -0.6 DB

Helps to avoid intersample peaks going above 0dB when encoded to different formats

— NO DITHER

Literally no one cares about dithering



Ableton export settings for archiving

DJ FRIENDLY AUDIO FILES

Audio files taken from the above deliverable 24 bit format, and converted for use on CDs

— 16 BIT .WAV

Still a very high quality format, but many CDs can't read higher bit formats

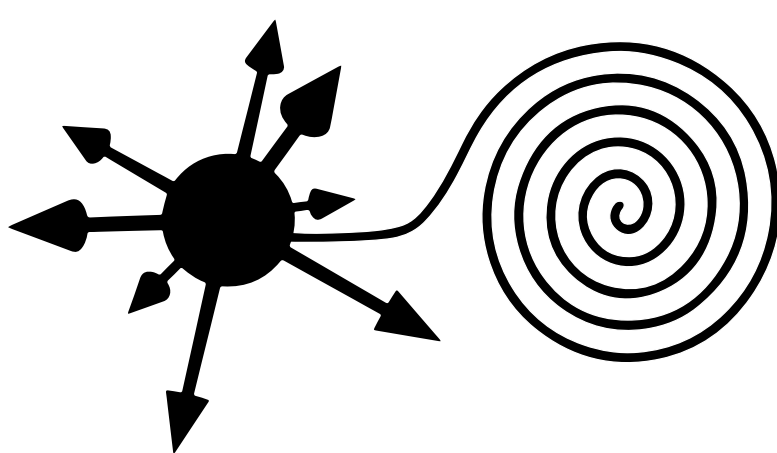
— 320KBPS MP3

I always create mp3 versions, just in case the WAV files don't load correctly or get corrupted

— 44.1 KHZ OR 48KHZ SAMPLE RATE

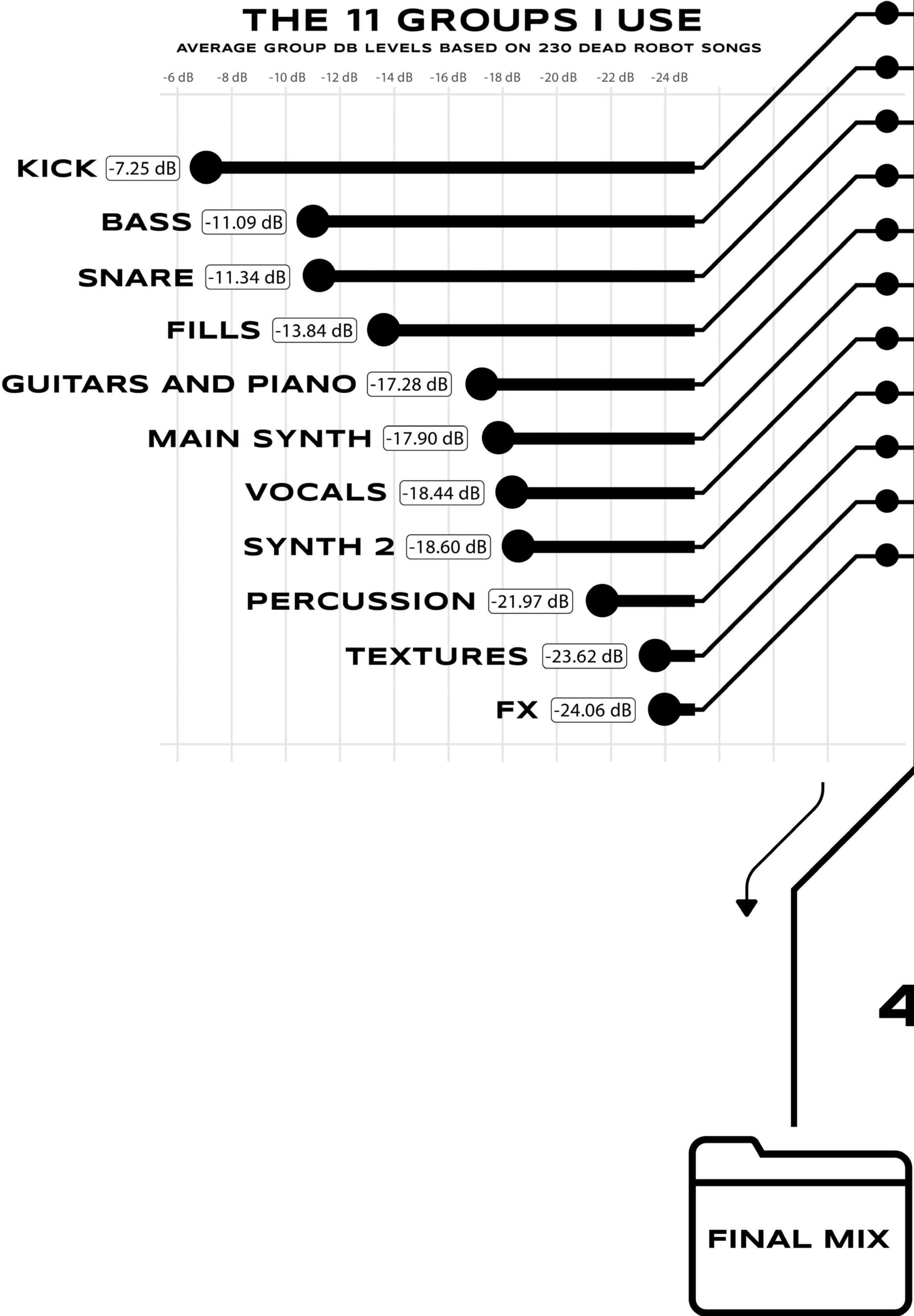
Whatever your original project was recorded and created at

ACTUALLY FINISHING MUSIC



Stay organized with wav bounces, value progress over perfection, and keep moving forward

To break down the last few pages into a more simplified process, here's an updated diagram I created to show you my finalizing organizational hierarchy workflow in 2025



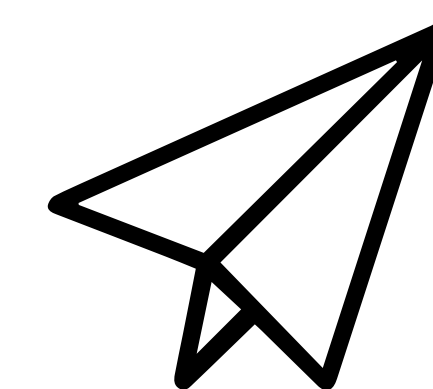
- 1. BE CREATIVE AND MAKE A WHOLE SONG**
- HAVE FUN EXPERIMENTING WITH NEW IDEAS, COMBINING IDEAS AND PATTERNS YOU LIKE, REMIX YOUR FAVORITE SONG, OR RECORD YOUR VOICE OR LIVE INSTRUMENTS
 - THERE'S NO RULES TO ART, JUST GUIDELINES :)
- DO AS MUCH AS YOU CAN, THEN EXPORT EACH INDIVIDUAL SOUND AS 32 BIT FLOAT .WAV FILES TO A FOLDER**
- FOLDER LABELING: [SONG NAME] DEMO STEMS + BPM**

EX:  **METAPHYSICAL VIP DEMO STEMS 155**

- 2. ORGANIZE ALL INDIVIDUAL SOUNDS INTO 11 GROUPS TO FINISH MIXING**
- TRY TO MAKE EVERY IMPORTANT SOUND FOCUSED WHERE IT NEEDS TO BE, NOT TOO QUIET OR TOO LOUD
 - CUT OUT UNNECESSARY FREQUENCIES (HIGH PASS FILTERS AND SOMETIMES HIGH CUTS)
 - DON'T BE AFRAID TO GET DETAILED AND SURGICAL USING VOLUME AUTOMATION/FADES

- 3. FINALIZING EFFECTS AND LIMITING**
- I USE MID/SIDE EQ, A FEW DIFFERENT TYPES OF SUBTLE MULTIBAND COMPRESSION, LIGHT SATURATION, MORE EQ, AND A MASTER LIMITER WITH A PEAK OUTPUT AT **-0.6 dB** WHICH WILL REMOVE MOST INTERSAMPLE PEAKS
 - MAKE IT LOUD AND COMPARABLE TO SIMILAR GENRES OF MUSIC TO YOUR SONG, BUT NOT SO SIMILAR THAT YOUR SONG LOSES ITS SOUL

- 4. FULLY FINISHED SONG EXPORTED**
- I EXPORT A 24 BIT .WAV FILE, WITH 0.2-0.4 SECONDS OF SILENCE AT THE BEGINNING
 - CONGRATS YOU MADE A WHOLE FULLY FINISHED SONG !! NOW SHARE IT WITH THE WORLD :)

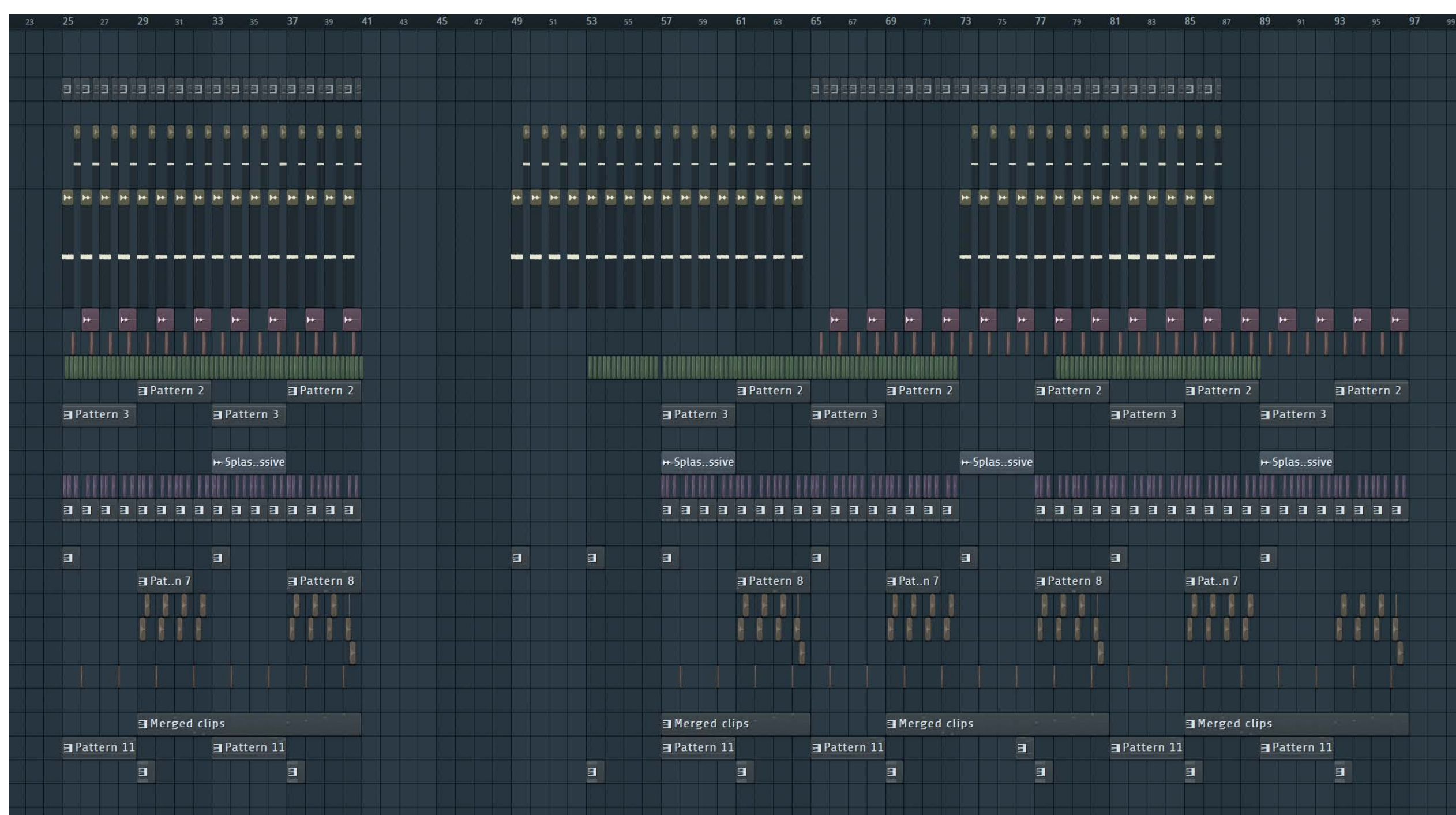


TIPS TO FULLY FINISH MUSIC

Sometimes it can be difficult to get from a demo or loop, to making a fully finished song, and after creating and releasing hundreds of original songs, I’ve learned a few tricks to help break that cycle. Below are some of my tips to break demoitis and fully finish songs

BREAK THE LOOP / MARBLE METHOD

A great technique I’ve found to help you when you only have a small loop, like an 8 bar loop, but don’t know how to turn it into a full song structure is to keep adding elements into that loop until it’s full of maybe 10 or so layers of drums, bass, vocals, melodies, and FX. Then, further down in your project’s arrangement window (keeping the original loop intact) start to play around with only having 2-4 of the layers playing at a time. Similar to chiseling a block of marble to reveal your statue, if you make a big loop where many elements work together all at once, breaking it down into something more minimal, while spacing the different elements throughout time, can quickly create an entire song structure with an intro, breakdown, chorus, or whatever you’d like. See the below image for a rough example.



TAKE NOTES AND MAKE TO-DO LISTS

This honestly works great for me to actually make progress on finishing songs. Usually, once I have a decent and listenable demo exported, I will listen to the song in my car and on my phone, and make mental notes during listening on what is too loud, too quiet, too annoying, etc. This is sort of the only time I will be a harsh critic of the idea, and once i’ve listened a few times I will write a to-do list in my notes app or in a notebook on what I should work on next time opening the project. As long as you make sure to actually be motivated to open the project file, and slowly try and check off your list, making sure to save iterations of the project just in case you tweak it too much, you can get a lot done this way. If you combine this with my “Iteration 2” method (see page 17), where you iteratively take notes, make changes, and do this a few times until you are literally out of ideas, that is usually when I call a song fully finished.

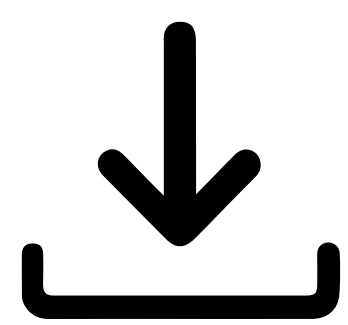
BE PATIENT

This is one of the most useful methods for me to actually feel motivated and inspired to fully finish new songs. Sometimes I will get a mix of a new track to probably like 90% done, and to most people it would be totally acceptable to release it as is. But often times I love to sit on the track for a little while, and come back to it a month or so later. In between that time, I will have learned new techniques, got or made new plugins, listened to new awesome contemporary music, lived my life in the real world, and all of that will help me to see the song from a more detached, rational and open-minded perspective. It’s almost as if I’m sending my song off to a mixing/mastering engineer, but it’s just future-me. Seeing the song from a new vantage-point and listening with new ears, even a day or two later, can do wonders to your perspective and mix. Sometimes you won’t have to change much and it will just be one small tweak you never considered, or maybe it’s an entirely new mixdown that breathes life into the song again. Whatever it may be, not forcing it to be done at a certain time, but continuously showing up and working at it earnestly will go a long way.

PROGRESS BEFORE PERFECTION

I’ve said this phrase a few times already but I love it. It really helps me remember that there is no such thing as a PERFECT finished piece of art, and keeps me experimenting, humble, and curious. You’ll be surprised if you ask yourself the right questions internally what answers come up. Try asking yourself “Is there anything else I can do to this song to make the song better?” or “What’s one small thing about this demo I can adjust to improve the mix?” . Don’t be afraid to ask for help and look online for resources and answers too, as we live in a community of amazingly talented kind people, and there are so many others out there willing to help you too, if you’re humble enough to ask and be open to learning.

EXTRA RESOURCES



Additional free helpful information and tools to level up your production skills

Here are some additional helpful creative tools, websites, and music production information I love to use and learn from



freesound.org is one of my favorite places to find royalty-free and cco samples. There's everything from drum loops, synths, live instruments, to field recordings. I have even uploaded like 4GB of cco samples on there too (also on my website for free)



Ultimate Vocal Remover 5 is an insane and free program to make diy acapellas and instrumentals of any song. The right screenshot is showing my go-to models for ensemble I've been using to get insanely high quality vocals or instrumentals to remix and learn from.



Everyone knows about Youtube, but it's an insanely powerful resource to find answers to literally any question you have about all things music, from mixing, mastering, production and plugin news, to more technical sound design and tutorials. Here's a few of my favorite channels to check out to learn.

- @SAGEAUDIO**

@AU5MUSIC

@AMNERHUNTER

@NEST.ACOUSTICS

@VIRTUALRIOT

@WEAVERBEATS

@BEATSBASTELN

@EMPERORDNB
- @YOUSUCKATPRODUCING**

@WHITESEASTUDIO

@DANWORRALL

@VENUSTHEORY

@THEHOUSEOFKUSHTV

@DAVIDHILOWITZMUSIC

@MRBILLSTUNES

@BAPHOMETRIX

other notable websites for finding samples, tools, knowledge, etc

- <https://archive.org/>
- <https://www.pianobook.co.uk/>
- <https://nanobii.com/p2t/>
- <https://songbpm.com/>
- <https://deadrobotmusic.com/>

if you REALLY need to get in contact with me here is my email
deadrobotsamples@gmail.com