

CYMATICS

# THE MIXING BLUEPRINT

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A complete guide to perfecting  
your mix.



## Introduction

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Achieving a clean mix can seem complicated, and you may not even think it's possible if you're still a beginner.

But the truth of the matter is, the entire mixing process can be broken down into easy, actionable steps that any producer can follow.

Of course some of the steps will become easier with more experience. But no matter where you are in your production journey, you'll be able to dramatically improve your mix by following this Mixing Blueprint.

Not only will we be going over how to get the perfect mix every single time, but we'll also examine some of the potential reasons that may be making your mix subpar.

Not to mention, we'll go over how to properly train your ear, so you'll know exactly what your mix should sound like.

By the end, you'll be able to achieve a clean, crisp mix, and all the elements of your track will be able to come together harmoniously.

If you're ready to make this happen, then let's dive right in:

## Step 1: Use A Reference Track

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First of all, we need to know what a reference track is. A reference track is a common term in the audio engineering world that refers to another song that you compare to your own.

One of the main reasons music producers do this is because they aren't creating their music in a sonically treated space, or they use headphones during the entire process.

So, using a reference track is an easy way to see if your track will sound good on different speakers, since a professionally mixed song most likely was mixed in a treated space and has been tested on several systems.

To keep it simple, each space alters the way we perceive sound based on many factors such as the surface, the dimensions of said space, objects inside the room, and many other variables.

If you want to do a quick experiment to verify this, simply grab your phone and play any song inside your bathroom. Then go somewhere else and listen to it once again. There is no right or wrong answer here, but try to come up with a small list of differences of how you perceived the song in each space.

This is also a problem with headphones, as the majority of beginner producers don't own a pair with a near flat response, resulting in a coloration of sound. And this is without even mentioning that time based effects such as reverbs and delays won't translate properly during the production process.



## Step 1: Use A Reference Track (Continued)

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This is exactly why one of the most stressful moments for beginner producers happen. They create a song they're excited about, and then they later realize that it sounds terrible when they show their friends or family in a different set of speakers.

So let's break down this process into a couple steps:

### A) Find Reference Tracks

Reference tracks should serve you as a northern star and help you take your own song in the right direction. So, at this point, you may be wondering "How do I pick a reference track?"

The simplest way to find multiple reference tracks is to spend some time listening to music within the genre that you're trying to create. Then cherry pick the ones that sound the best to you.

After that, spend some time doing some research on the internet or ask around to find out what songs have well regarded mixdowns.

And this will surprise you, but you also need to do some research and find songs that have bad mixdowns. We will explain why on the next step.

Once you have selected a few songs, you need to get your hands on lossless files or at least a 320 kbps MP3. However, we really encourage you to use wav or aiff files to reference tracks, so go support your favorite artists and purchase them.

### B) Listen, Listen, Listen

The whole purpose of this is to train and calibrate your ears. You need reference points to compare and know where something is currently standing.

Listen to your reference tracks in your phone, with headphones, in your monitors (if you have a pair), in your car, and everywhere you can think of.

This is also where having a couple songs with bad mixdowns comes into play. By listening to those songs as well, you should be able to compare how a great mixdown translates compared to a bad one in multiple scenarios.

There are tons of articles out there that showcase some of the worst mixed albums of all time, but a good way to find songs to "A/B" in more nichèd genres is to grab one that has thousands of plays and another one that didn't do so well.

You may argue that other factors are involved in how many plays a song gets, but by now you should be able to see the larger picture of this.



# Step 1: Use A Reference Track (Continued)

## C) Compare Your Own Song With Your Reference Track

This is the moment of truth. It's time to import one of your reference tracks into your DAW, compare it to your own productions, ask questions, come to conclusions, and get to work.

Your own production won't be mastered so before you even get started, as a good rule of thumb, drop your reference track by the amount of headroom you're working with.

This simply means that if you're working with -8 dB of headroom for your own track, you should also drop your reference track more or less around that amount.

Louder will always sound better to human ears. It's a psychoacoustic effect we can't get rid of no matter how well trained your ears are.

Now, it's time to start asking questions:

1. How wide is my song compared to the reference track? How does my panning compare to the reference track?

This doesn't mean you should mirror your reference track exactly, as you might have slightly different elements. But the stereo image of your song should resemble your reference.

2. What element dominates each frequency band of the audible spectrum?

Does my reference track have the kick dominating the low end? Is it the bassline?

What element(s) is sitting in the low mids?

What element dominates the mid range?

How bright/airy/crispy is my high end compared to the reference track?

To help you isolate certain frequency bands, you could try low passing your reference track to hear strictly the low end. Alternatively, you could high pass it to hear the upper range, while a bandpass filter might be a good choice to hear some of the mid range.

Just remember that harmonics bleed into other frequency bands. Depending on the genre, some kick drums will have content even in the 12 kHz area, for example, so never try to match elements of your song while filtering the reference track.

3. How does the depth of my song compare to the reference track?



## Step 1: Use A Reference Track (Continued)

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Is my reference track absolutely dry and hard hitting?

Does everything sound like a band playing in the same room?

Does it sound airy and dreamy with long washed out reverbs?

These are just some of the most important questions you should ask yourself to achieve similar depth in your songs.

It's hard to ask specific questions in this area of mixing. This is because, depending on your reverb settings, your sound just might become bigger, give the impression that it's inside a room, or that it's in a gigantic cathedral.

The key here isn't to think in technical terms.

The key is to analyze how your brain is interpreting the sound. For example, you can put a sound inside an hypothetical room with a delay if you set it up correctly, while most producers would say you would need a reverb to achieve this. It's all about perception.

Another proper question would be:

What is the general approach to reverbs and delays in my reference tracks?

As final words on this step, this process should be like ping pong, back and forth until the desired result is achieved. However, don't get demotivated if you don't get it completely right in the first few attempts. Learning how to reference tracks while maintaining your own vision is a skill you develop over time.

## Step 2: Sample Selection

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Sample selection is one of the most overlooked parts of mixing, but it's something that could help you avoid so many issues that could arise later down the road.

For example, if you select an amazing kick drum right from the start, you won't have to EQ it, compress it, limit it, and have ridiculously complex plugin chains to make it sound good.

Sometimes layering mediocre samples and processing them will yield decent results, but the truth is you can't polish a turd. So remember this:

A great mixdown begins with great sound choices and arrangement decisions.



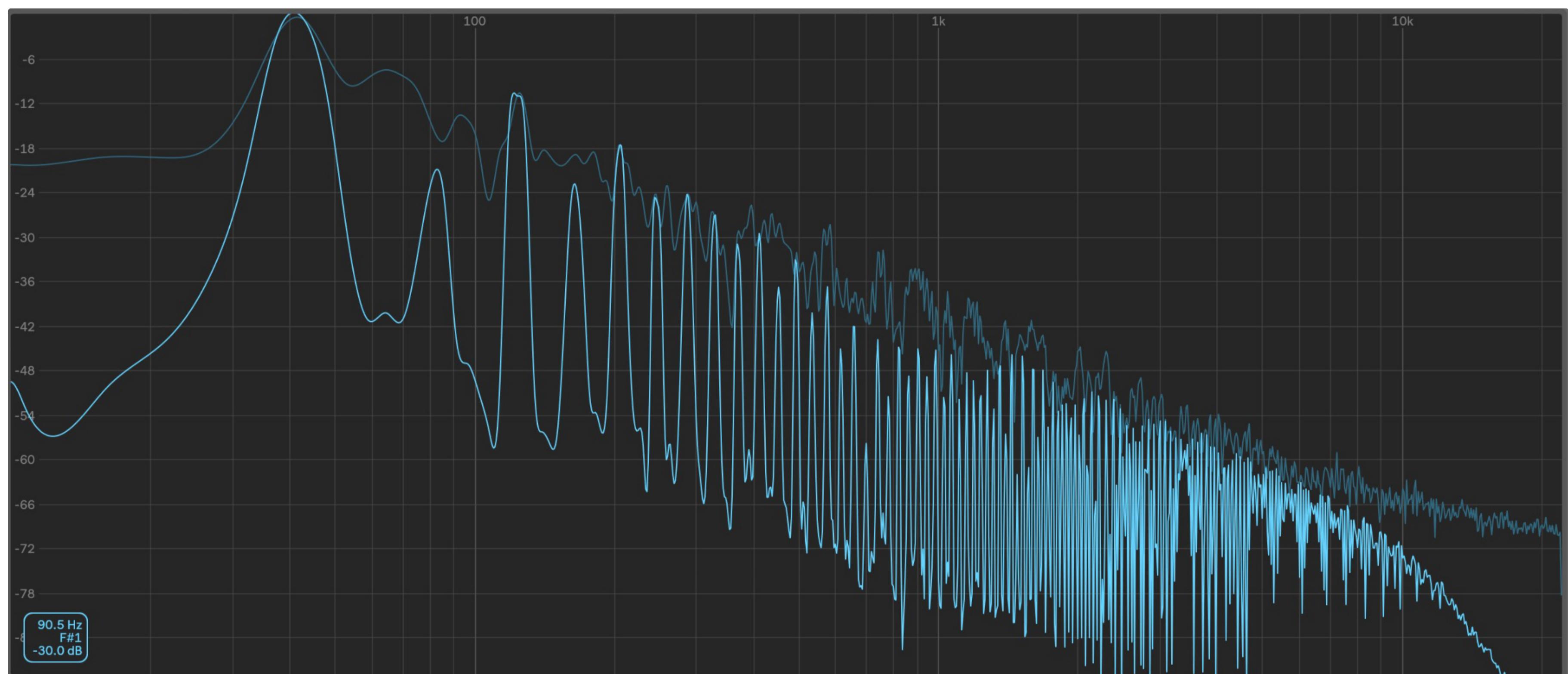
## Step 2: Sample Selection (Continued)

Learning what a great sample sounds like on its own comes with a little bit of practice as well. As we mentioned earlier, it's all about developing your ears.

However, we are lucky to be producers in a time where hundreds of amazing high quality sample packs are readily available to us. So don't be shy and ask one of your favorite producers what sample packs he or she use or still uses.

A great amount of producers create their own samples, but that's the normal evolution after learning what a great sample sounds like. Spend some time studying high quality sample packs, dissect them, and use them in your own productions.

## Step 3: Filling Out The Frequency Spectrum



We talked about this briefly in Step 1. You need to analyze multiple reference tracks for your preferred genre and come to a general conclusion as of how they're filling the frequency spectrum.

Think about an ambient track for example, it won't have a hard hitting kick drum or groovy bassline, but it will still have low end. How are ambient producers filling out that part of the frequency spectrum?

This is the general approach you should take and the question you should ask yourself.



## Step 3: Filling Out The Frequency Spectrum (Continued)

Then you should be objective and analyze what part is lacking in your song. Best case scenario you have an incredible arrangement that just needs some tweaks here and there, but you have a pretty well balanced frequency spectrum throughout your entire song.

You can take it one step further and analyze how they're managing their frequencies in different sections of the song.

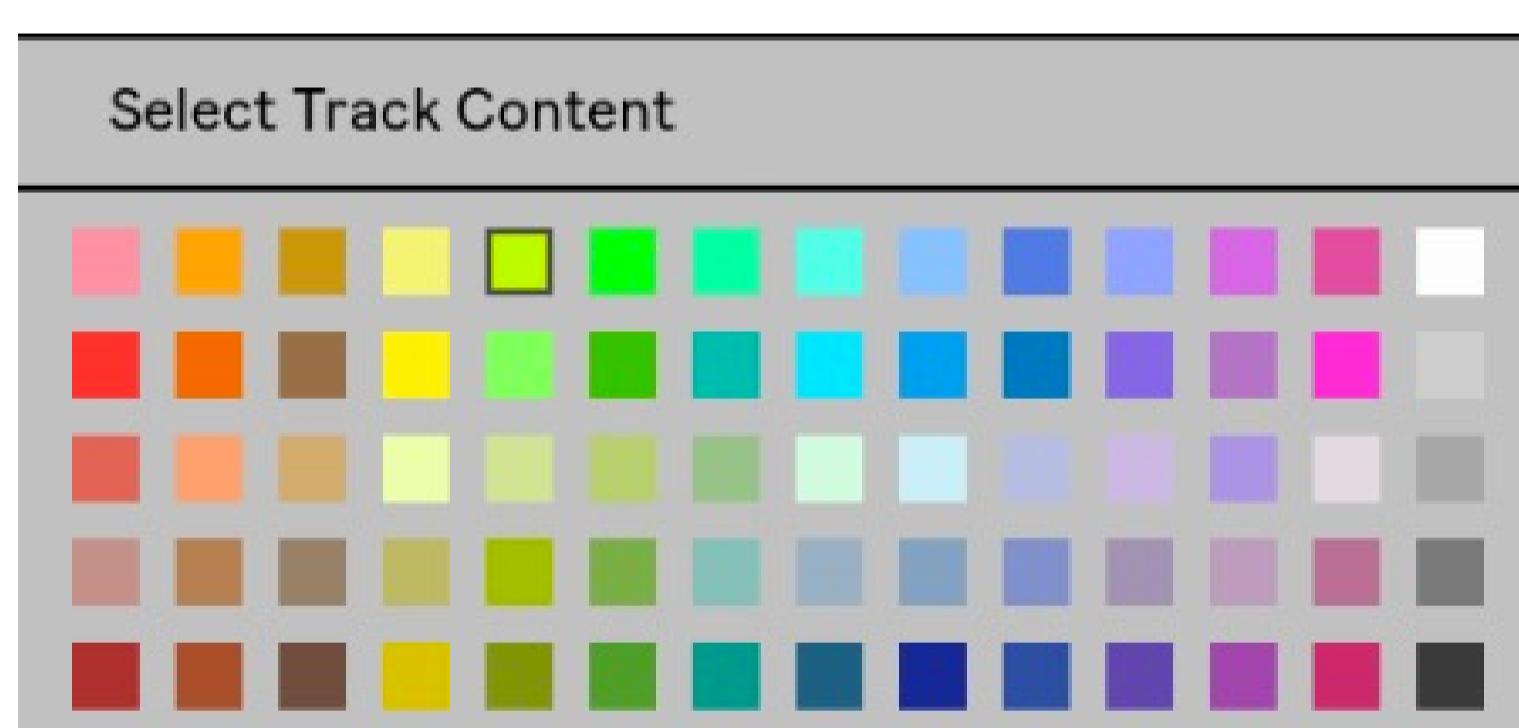
How does the mid and high range compare in the second drop to the first drop?

Are there any low end during the break section?

How bright is the song in general? (for example, think about Lo-fi house for a moment)

Every song will be different, but you should be able to see some really striking similarities that you can copy in your own productions.

## Step 4: Organization



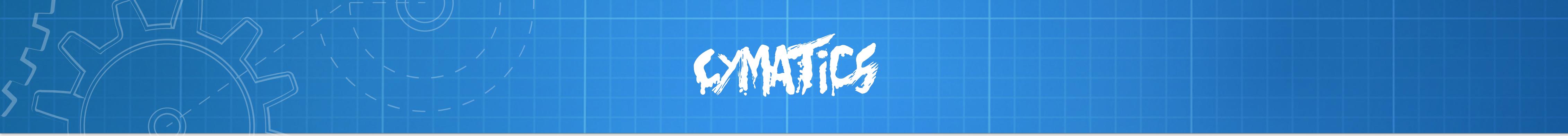
We can't stress this enough: you should be organized from the very first moment you come up with an idea. If you're in a creative flow, try not to break it. Keep going and lay down your ideas, but as soon as you step back spend some time organizing your project file.

As you progress in your production journey, your 20 track projects will quickly become 100+ track project files.

Trust us, you don't really want to be in that nightmare where you have to mixdown the entire thing from scratch and everything is labeled incorrectly.

We also highly encourage you to use color schemes for both your arrangement and your channels. There are multiple approaches to this, so you will need to find one that works best for you.

But to get you started, you could try coloring all your midi clips and audio files for your intro one color. Then you can use another color for your verse, another color for your chorus/drop, and so on.



## Step 4: Organization (Continued)

As for your channels, you could use the following approach:

You could use basic color theory and blend it with frequency spectrum. Use dense colors like dark blues, dark reds, or purples for all your low end elements or drums. And as you go up in the frequency spectrum, you keep using lighter colors.

For example, all your drums could be dark blue, your basses could be a dark orange, your synths could be green or blue, your percussions a light brown, and all your hi-hats, crashes, and cymbals could be light yellow.

As we said, this is just one of thousands of approaches. We hope this one gets you started, and you later develop your own.

## Step 5: Gain Staging



Gain staging is an eluding concept for most beginner producers, but it's not nearly as complicated as people like to make it.

Gain staging is simply managing the input levels at every point of your signal chain.

What does this mean in an actual example?

Let's say you load a simple audio loop on one track and play it. The only way to control the volume would be with the channel fader unless you load a utility plugin.

That's when gain staging comes into play. When you start adding processors (plugins) you start adding "gain checkpoints".

So the concept of gain staging is that if your signal is at, for example, -8 dB and then you add any type of processor, ~8 dB should come out as an output.

This is when psychoacoustics come into play, and we touched briefly on this concept in step 1. Louder will always sound better to the human ear. There's no way around that.

So the next time you crank a compressor and think it's sounding great, make sure you're gain staging correctly and assess if it's actually benefiting your signal or if you're just getting tricked by its loudness.

Things start to get just a little bit tricky when you add different types of processors in series and even in parallel, such as gain dependant plugins (compressors, distortion units, etc.) and time based effects (reverbs, delays etc.).



## Step 5: Gain Staging (Continued)

For example, you might compress an audio signal fairly hard and use the make up gain to gain stage properly and have a fairly similar output level. Then you proceed to add a heavy reverb on the chain, about 80% wet.

You realize that your audio signal might have lost some power, and you start to wonder why when there's no actual direct gain alteration involved in that processor (the reverb). This is because you need to understand how frequencies play a role in each sound.

Think of a cargo ship, when they sound their horn everything around it starts to rumble and even glass may break. This is because low end frequencies have bigger wavelengths and carry a lot more power (talking real physics over here), whilst mid range and high frequencies have shorter wavelengths and therefore are way less powerful.

This is what may be happening with your signal drenched in reverb. The power of it may be getting washed out, even if there was no gain involved in the processor.

So the key takeaway here is to properly assess the gain input/output levels in your gain dependant plugins and how it is altering your frequencies/perception of the signal.

That is the real tricky part about gain staging, but it is primarily just making sure that your output level is really close or just the same as your input level.

As some final words, don't take this as a hard and fast rule. You can always add some gain to your signal and nothing bad will happen (most of the time anyways). Sometimes that's just necessary.

This is also one of the reasons why we leave headroom in our mixes, so we have space (headroom) to alter the mix with processors at the cost of some dB's of gain to fix any potential issues.

At the end of the day, mastering in general is about making sure that our mix will translate properly to any other systems and getting it to a commercial volume level.

## Step 6: Bussing



This step is related to step 4, but now it isn't merely for organizational purposes.

When you "buss" or group elements together, you do it with the sole purpose of processing or controlling them as a whole. There are multiple reasons why you would do something like this.

Think about a pop song for a minute.



## Step 6: Bussing (Continued)

Verses are always quieter than the choruses. However, the last chorus before the bridge or the one before it (depending on the artist's vision and message) are always the most energetic and loud parts of the entire song.

Amplitude (volume) is the main way to achieve/control this. So you would automate your synths, vocals, and maybe even your drums to be just slightly quieter during the first minutes of your song.

And when you reach the climax of your song, you could automate your busses (among other techniques) to be slightly higher and achieve that energy spike your song needs in the right moment instead of automating multiple channels all at once.

This is just one of many reasons.

While processing multiple elements together, if done the right way, you could enhance the groove, make them sit together nicely, and improve overall clarity.

Unfortunately, there's no right or wrong way to buss things. Doing advanced signal paths can be as creative as composing an entire song.

As a general rule of thumb, you might want to buss things that make sense together.

For example, you can buss your drums, your synths, all of your backing vocals (if you have any), your percussions, and your fx's into their respective individual buss tracks.

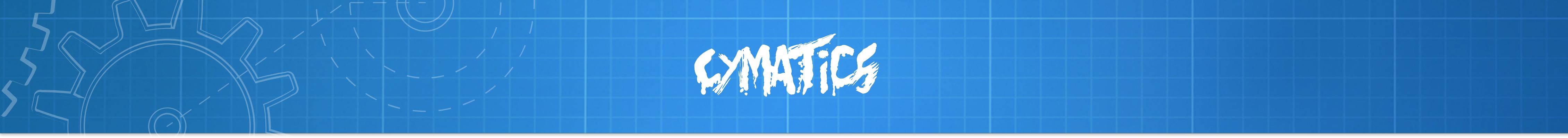
This way, a mix that originally was 100 tracks can be controlled in its entirety in 5-8 tracks.

## Step 7: EQ



The most important distinction we need to make about EQ's is that we need to know whether we're doing it with the intention of sound designing or mixing a song.

Both mindsets are completely different. When you're EQ'ing with the purpose of sound designing, almost every move is quite drastic with huge boosts, cuts, automations, and even just random experimentation.



## Step 7: EQ (Continued)

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However, when you're EQ'ing with the intention of mixing parts of your song, your mindset should always be to have a goal.

Always remember the following:

You should always EQ with a purpose. Think of it as a clay scalpel.

A good rule of thumb is to approach EQ'ing as carving space so everything fits together nicely.

For example, you may carve a little pouch with a bell curve on your synth buss (a 2-3 dB cut) to make space for your main vocal. It's just like fitting a puzzle together.

EQ'ing is also a great tool to get rid of resonant frequencies. As time goes by and you build experience, you'll start making logical connections on how certain frequencies affect (or play a role) in different types of instruments and where the harsh spots live at.

Think about crash cymbals and rides. 98% of them have a ridiculous resonant frequency around 5k, so it should become second nature to know that you have to frequency fish that resonant spot and get rid of it every single time.

With this mindset in place, you should come to the conclusion that it's usually not the best idea to load an EQ and just start cutting/boosting frequencies without any specific purpose.

You may just end up thinning out or ruining your instruments/sounds inadvertently (For example, the high passing every sound by default mania that many producers do which actually causes tons of phasing issues in live recordings).

However, it's good practice to frequency fish your sounds to hunt down resonant frequencies that you might not even pick as a whole and make cuts where needed. Once again, it all comes down to training your ear and experience.

To fish resonant frequencies all you need to do is create a bell curve in any EQ, boost it around 8 dB (be careful with your ears), and set up a tight bandwidth (Q) of around 2 or maybe even 3.

Finally, proceed to sweep your sound while it's playing and try to spot anything that hurts your ears and make the necessary cuts.

Just be careful and think of this example though. Let's say you play a dominant chord on your piano (V7). Dominant chords are quite dissonant by nature, so if you try to frequency fish this type of chord, you might find yourself trying to cut the actual dissonant notes of the chord.

Try to keep in mind the actual nature of the sound you're trying to EQ.



## Step 7: EQ (Continued)

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There are also multiple philosophies regarding EQ'ing. Some people preach that you should only cut, and not boost so much, and it's somewhat true.

EQ's were designed primarily to cut, but if a boost is propelling you towards your goal, do it. Just remember, perception is everything when it comes down to music and mixing.

If you're trying to emphasize a certain frequency band, instead of boosting it first, why not try cutting a little bit of the areas around it instead?

Pro Tip: You can manage the attack phase (the transient) of any sound to a certain degree by EQ'ing it. Try messing with the upper frequencies of your source sound.

## Step 8: Compression

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Compression, the dreaded dynamic process that haunts producers for years until they finally comprehend it.

Unfortunately, we do not have a magic formula that will help you understand it like everyone claims they have.

You can find tons of guides and tutorials on the specifics compression online (Academy.fm has several full courses on compression), but what we want to stress in this guide is to not OVER compress.

The best rule of thumb is, if you don't know why you're compressing a sound, it's better to not do it and leave it alone.

What most producers also don't know is that saturation and distortion are a form of compression. So after they finish up creating their crazy signal chains, the original audio ends up completely smashed.

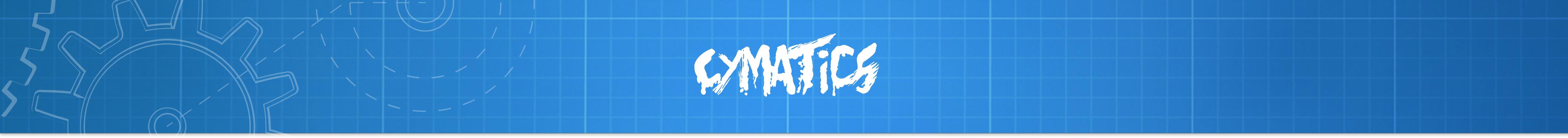
Don't get us wrong though, sometimes that is the intended actual end result. A completely smashed signal.

But why do compressed, smashed, and loud signals sound good? If you were quick enough, the previous concept we talked about should've popped right away in your head.

Loud sounds better.

The music may still sound good, because your brain makes sense of all those frequencies, and you can certainly achieve clarity if you're making music out of the differences of each sound.

In other words, each sound is dominating different areas of the audible frequency spectrum and the only overlapping frequencies are the harmonics.



## Step 8: Compression (Continued)

Seriously, take some time out of your day and listen to some old records. The clarity, the dynamics, and the stereo image are incredible if you know what you're listening to.

There's a time and place for loud and compressed songs too. Just keep in mind what the message is and concept you're trying to get across to your audience. It's not entirely about the composition itself; it's about how the idea presents itself.

Just think about how a pianist plays certain passages softly, and other ones with a lot of energy.

Even inside a single song you may have parts in the arrangement that ask for nice dynamics, and other ones that require that smashed, in your face sound.

Be aware of how these concepts completely change how you perceive music. Go back and listen to some of your favorite songs from your childhood and pay attention to how they managed this in their projects.

**Pro tip:** Think about dynamics in music as dynamics in a painting. A wise old man once said that all concepts in every single art form are the same.

Rhythm, emphasis, variety, economy, repetition, balance, continuity, unity, and so on...

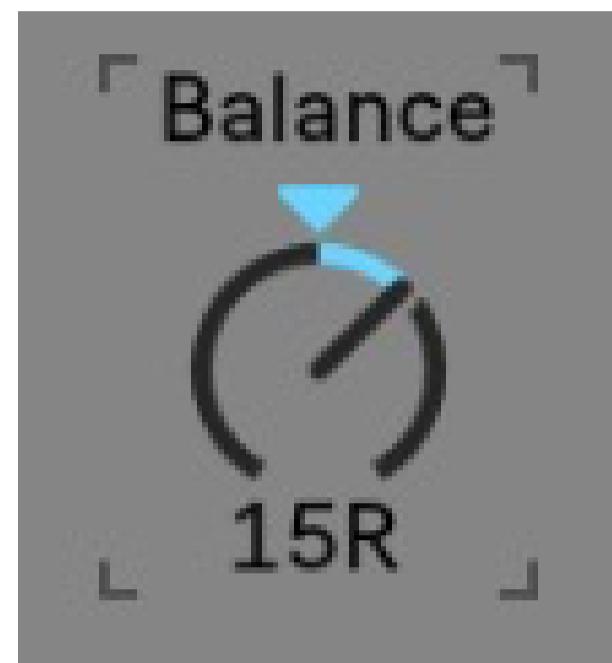
In a painting, things in the background tend to have less dynamics compared to the main focal point of attention where you can see every single detail.

Try smashing the elements in the background of your song, and leave your main leads dynamic. See how your perception changes.





## Step 9: Panning



We talked about panning briefly in Step 1. It's usually a good idea to create a general map or layout of tracks within your genre to have a good starting point, but don't be afraid to experiment.

It's quite interesting listening to really old records and seeing how panning has changed throughout the years. Seriously, some really, really old records have the entire drum kit panned to one side while the rest of the elements sit on the opposite side of the mix.

Although you need to remember that people didn't have access to headphones back then and listening to music was a completely different experience.

Now, think about it for a second. Panning is the most natural way to recreate how our brain perceives sound in real life. When you see a band or an orchestra, they all take up actual physical space, then sound waves travel from those spots and hit our ears.

Even though we only have monitors/headphones to create our mental stereo image, because sounds aren't really there, panning is the most effective way to emulate any instrument being in its own space (besides reverb and extra processing).

This also helps with bringing clarity to transients. Try this little experiment: Grab 2-3 simple percussion loops and make them mono. Proceed to play all of them at the same time.

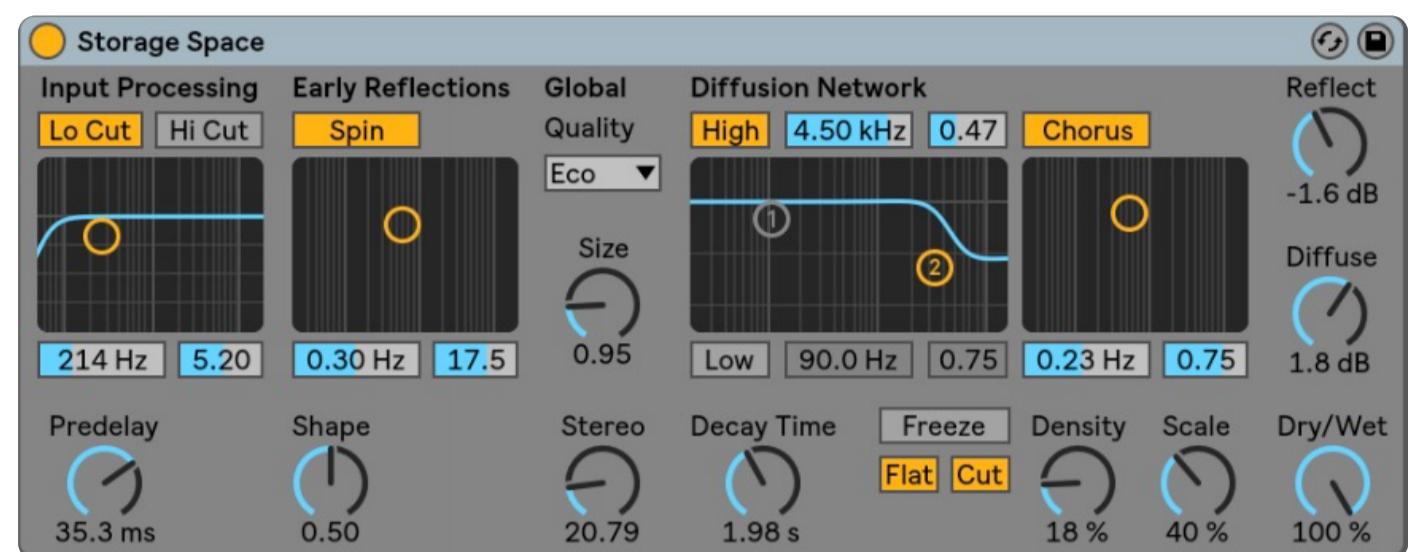
Your brain might be able to keep up, but it will definitely be a mess and it might get annoying really quickly. If you pan them though, your brain will be able to process the transients better and clarity will improve.

Electronic/Modern tracks rely heavily on mid/side processing to widen sounds, but this shouldn't stop you and make you not pan your sounds.

For example, a very common technique used nowadays is to track vocals or instruments twice and pan each take hard left and hard right to create a unique stereo image that otherwise wouldn't be possible to achieve.



## Step 10: Reverb



Reverb is such a complex topic that it borderline deserves an entire book by itself. Seriously.

People tend to believe that compression is the only hard/complex tool to master in music production, but to use reverb in a tasteful and skillful way is definitely up there.

You can use reverbs to emulate and put your sounds in places that you wouldn't be able to record at unless you had a lot of money, and you can even create unrealistic sounding spaces if you have the right plugins.

You can also use reverbs in really creative ways to create an immersive experience, crazy sound effects, and much more. Your imagination is the limit here and how you can manage to automate your reverb parameters depending on your sound source.

But let's keep it simple here and talk about the more general use of reverbs.

- If you use a short reverb on your sounds with around 200-700 ms of decay, it will help your brain perceive them as if they were in the same room.
- A medium reverb—it could be a very similar one to your short reverb, just with a slightly longer decay, 1-2 seconds—can help you place tracks in your mix and create depth.
- A long reverb can help you wash out sounds, fade them in/out, and create special effects throughout your song just as many producers do during build-ups in electronic tracks.

It's worth mentioning that you should be careful with longer reverbs, as they can get really muddy real quick.

Don't forget to try and set up your pre-delay accordingly. It's arguably the second most important parameter of any reverb besides the main decay time.

The pre-delay is basically the time that takes for the sound to hit a reflection source and bounce back to your ears. That's one variable that also helps your brain determine the size of the room.

Imagine you're talking inside your bedroom with someone. Your voice takes just a few milliseconds to hit the walls of your room and start bouncing everywhere until it decays.

Try to find or record a really dry vocal. Use a room reverb with 0 ms of pre-delay, it might not sound bad if you adjust the dry/wet signal, but it definitely won't sound natural and your brain will tell.

## Step 10: Reverb (Continued)

Now, picture yourself yelling at the grand canyon. The pre-delay is way longer because sound has to travel a bigger distance to bounce back, and part of it actually gets diffused because there's no roof.

There's a brief pause between each echo, and that's basically sound travelling until it hits the next reflecting surface.

## Step 11: Preparing For Mastering

This is an overall checklist/strategy to do before you print out your mix to get it mastered.

- All your tracks are balanced and mixed around "an anchor". Most electronic music uses the kick drum as the anchor. Set it up to a healthy volume level, peaking at -6 dB is a decent rule of thumb, and mix everything around it.
- Clean up and process every individual track/stem accordingly. You did some saturation, EQ'ing, and compression (if needed). Don't overprocess every single sound in your song.

*"If you analyse good music production, some sounds are incredibly detailed and physical, while other sounds are loose and under engineered. If every sound was a bold statement, the track wouldn't be saying anything"*

- Mat Zo

- Place each element of your mix based on your reverb strategy. Will it be raw and hard hitting? Do you want everything to sound like it's in the same room? Do you want to place some elements in an unreal space?
- Buss elements that make sense together and process accordingly. Synths, Drums, Percussions, FX's, Backing Vocals, etc. Process each buss if needed, this is all situational and it's hard to set rules for this step. Usually some minor glue compression and color EQ'ing works well.
- Extra processing and automation. Send some elements to delays or any other crazy effects that you might have on your return tracks.

## Step 11: Preparing For Mastering (Continued)

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- Give your track at least 2 days of rest and don't listen to it at all during this time. Come back to it with fresh ears and do minor tweaks. We promise you that you will hear things differently and you will be able to give it some extra finishing touches

## Conclusion

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By now, you may have realized that you weren't that far off from achieving the perfect mix!

You just have to follow the right steps and continue to practice until you get your mix to exactly where you want it to be.

Just give it time and keep this guide handy, so you can come back to it anytime you need.

And then soon enough you'll be able to play your track on any device and have it sound just as clean as the ones on the radio!

# The Mixing Checklist

## Step 1: Use A Reference Track

- Did you compare your song to a reference track? Listen closely to your mix side by side with your reference track. Adjust your mix accordingly to be similar to the reference.

## Step 2: Sample Selection

- Did you choose the best possible samples for your track? A great mixdown begins with great sound choices and arrangement decisions. Make sure your samples are up to par with the samples you hear in your favorite songs.

## Step 3: Filling Out The Frequency Spectrum

- Did you fill out the frequency spectrum? Make sure your song has each frequency filled out nicely. There should be a nice balance of lows, mids, and highs so that no frequency sounds too exaggerated.

## Step 4: Organization

- Did you organize your project? Color your tracks, group similar sounds, and make sure to name everything. This will ensure you don't get lost while you mix your song and will speed up your workflow.

## Step 5: Gain Staging

- Did you apply gain staging? Gain staging is simply managing the input levels at every point of your signal chain.

## Step 6: Bussing

- Did you buss (or group) your tracks? As a general rule of thumb, you might want to buss things that make sense together. You can buss your drums, your synths, all of your backing vocals (if you have any), your percussions, and your FX into their respective individual buss tracks. This way, a mix that originally was 100 tracks can be controlled in its entirety in 5-8 tracks.

## Step 7: EQ

- Did you EQ correctly? You should always EQ with a purpose. A good rule of thumb is to approach EQ'ing as carving space so everything fits together nicely. If you're trying to emphasize a certain frequency band, instead of boosting it first, why not try cutting a little bit the areas around it instead?

## Step 8: Compression

- Did you compress correctly? The best rule of thumb is if you don't know why you're compressing a sound, it's better to not do it and leave it alone. If you are compressing, think about why you are doing it.

## Step 9: Panning

- Did you utilize panning? Panning is one of the most underrated ways to free up space in your mix. Try panning certain drums or synths and see if it cleans up your mix.

## Step 10: Reverb

- Did you use reverb correctly? Too much reverb can make your mix muddy, but the perfect amount can add character to your song. Make sure you use reverb in moderation.

## Step 11: Preparing For Mastering

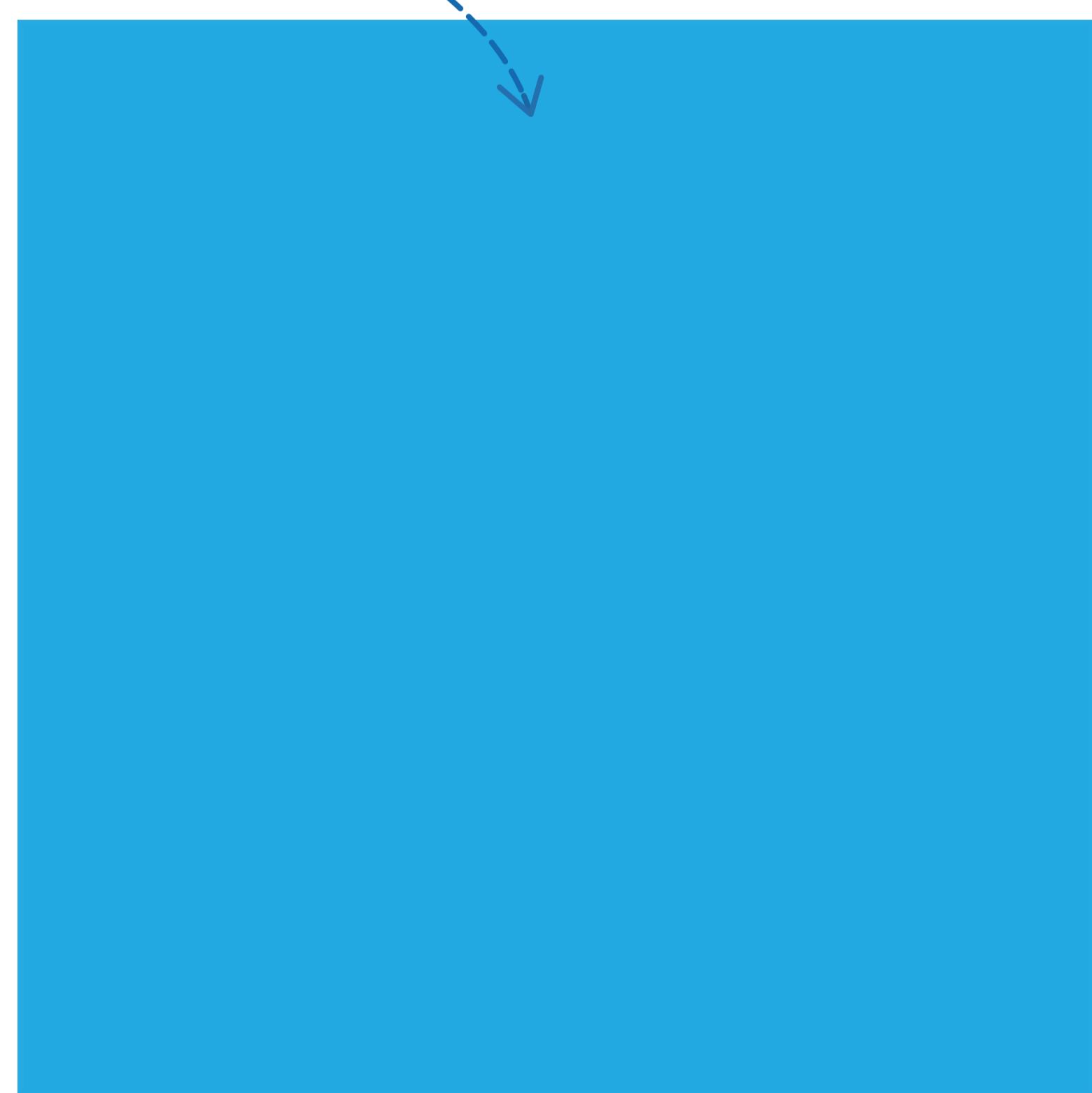
- Did you prepare your track for mastering? Read through the Mixing Blueprint section on preparing your track for mastering.

# Visual Mixing Guide

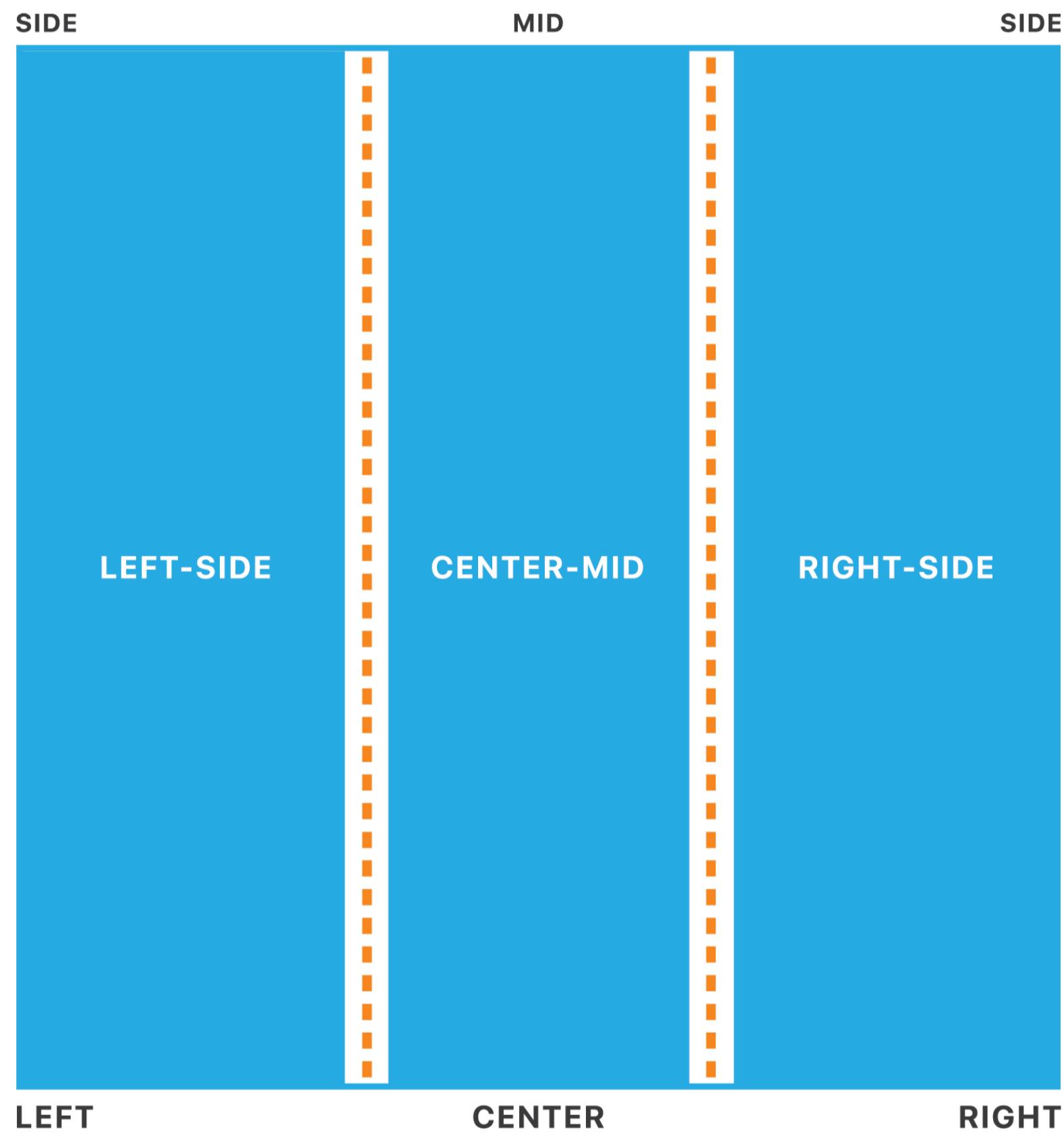
## Stereo Imaging

Human beings are naturally drawn to visuals, so being able to visualize your mix is an incredibly powerful tool.

**1.** Let's start by picturing our mix as a box. The top side or ceiling of this box and its vertices start just where your monitor tweeters are.



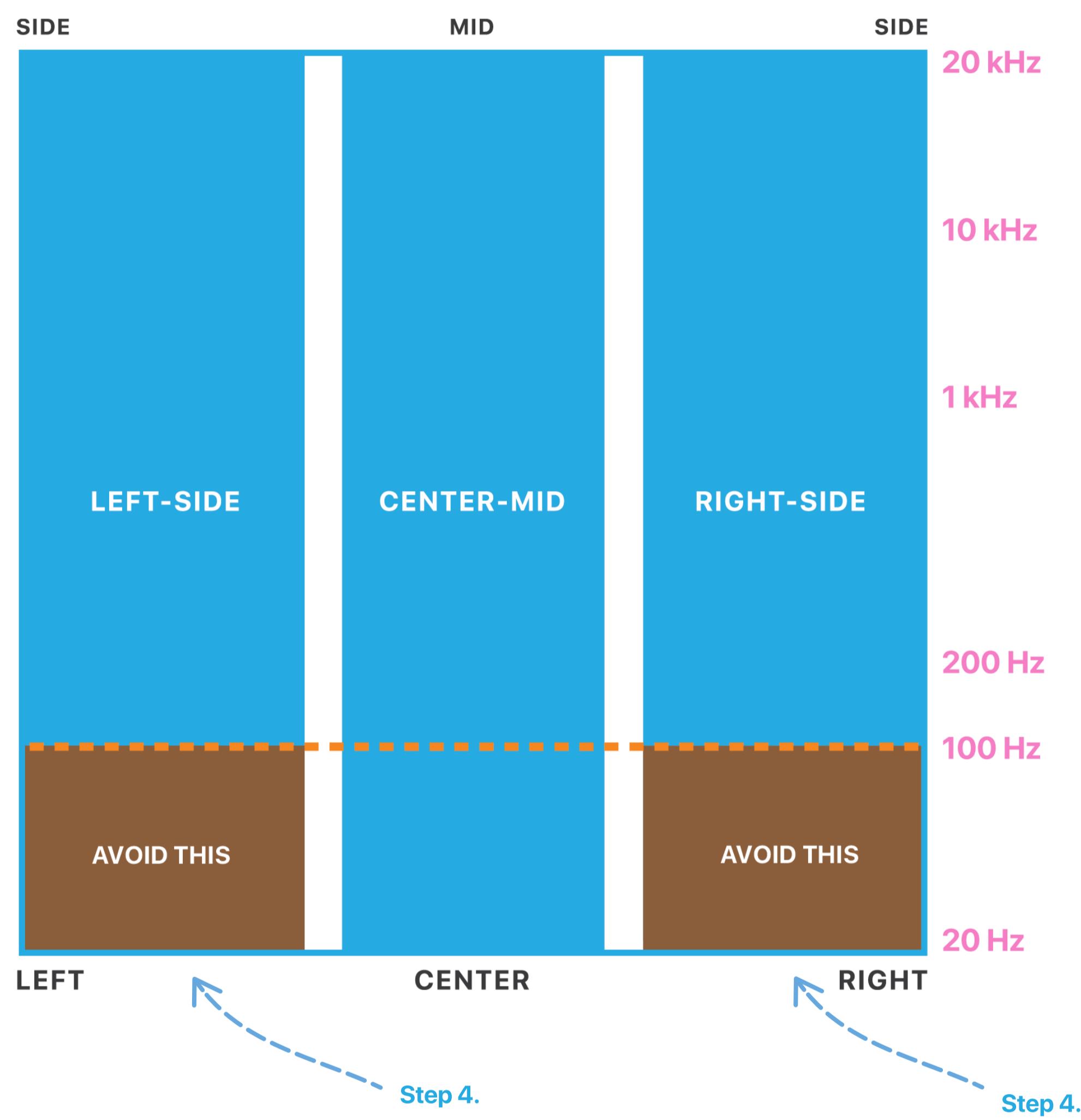
**2.** Assuming your monitor placement is right, and you're creating some sort of equilateral triangle—ideally—from your monitoring position (basically where you're sitting), the center-mid should be right in front of you. The left side and right side should be exactly between your monitors and your field of vision.



# Visual Mixing Guide

## Frequency Spectrum

**3.** The height of this box is basically the human hearing range, from 20 Hz to 20 kHz. Assuming you have a subwoofer, the bottom side or floor of this box (20 Hz) could technically be on the floor of your room. Just remember, the ceiling of your box is outlined by your monitor tweeters.



**4.** To keep it simple, lower frequencies have longer cycles... 10 Hz, 20 Hz, 90 Hz, and so on. All this really means is that your speaker cones have to move slowly to be able to play back these kind of waves.

This is the main reason why mud happens in a mix. If your low end isn't well defined and there are misplaced low end frequencies, your speakers just struggle playing back all those slow wave cycles at the same time.

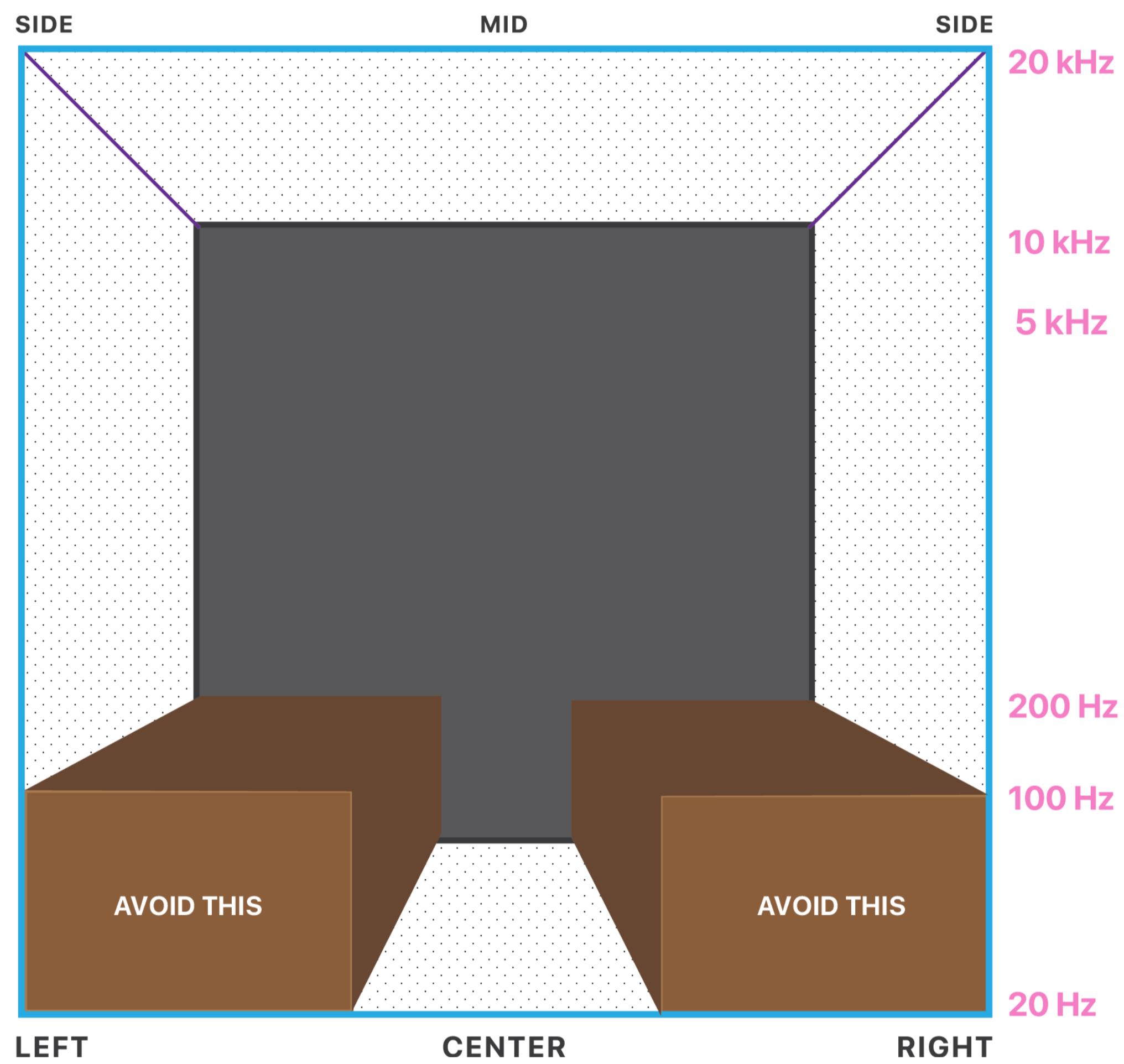
It's usually a good idea to have nothing below 90 Hz or even 100 Hz on the sides of your mix.

This is also the reason why sub frequencies are kept mono, so both your speakers reproduce those waves at the same time and not cause any phasing problems.

# Visual Mixing Guide

## Depth

5. Depth is simply controlled by amplitude (volume). The lower in volume an element is in your mix, the further away it will sound. The contrary is also true, any element that has high amplitudes will sound like it's right in front of your face. You can also accentuate the illusion of depth with effects such as reverbs and delays.



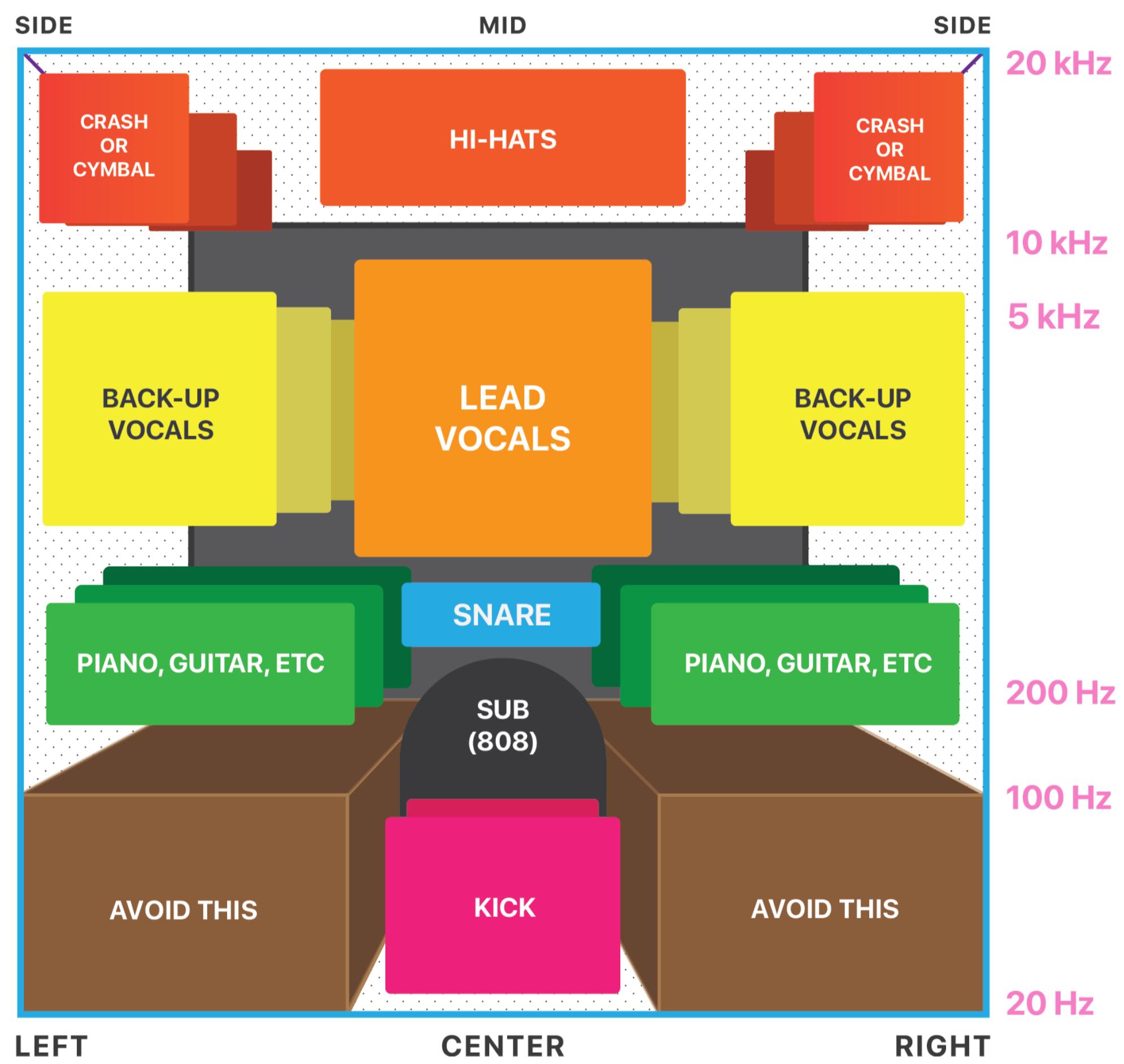
**Note:** You can create depth in many ways. Simply adjusting volume is the simplest form of creating depth to your mix.

Depth can also be achieved by adding effects such as reverb, simple delays with shorter delay times, etc.

# Visual Mixing Guide

## Applying Elements

6. Now that you know these principles, you can start filling your mix (box) with multiple elements. To achieve a clean mix, all you need to do is give each element its own unique space. We know it's not as easy as it sounds written on paper!



**Note:** The "hidden" fourth dimension in your mixing space is time.

Over time, each element will change in volume, disappear, reappear, move to another place in your stereo image, or even be completely replaced by a new element.

A great mix engineer makes sure to create a clear mixing space where every element has its defined place throughout the entire song.