

The Ultimate EQ Cheat Sheet for Every Common Instrument

RECORDING

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Aaron Stanulis (<http://blog.sonicbids.com/author/aaron-stanulis>)

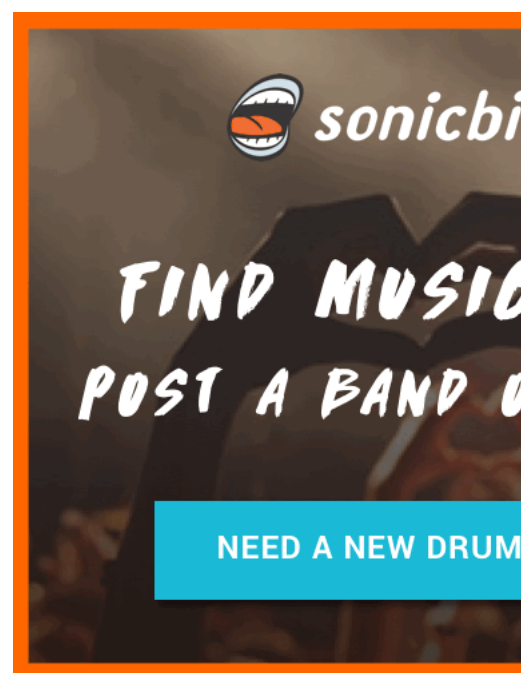


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You asked, and you shall receive, Sonicbids blog readers. Per multiple requests, here's my guide to, "When the hell do I start turning these knobs, and where do they go?" But before we begin, I offer you the fine print: These references are general ideas for where to begin to look for sonic issues with particular sounds, instruments, and voices. I'm not going to tell you "always notch this 9 dB here and add 3 dB here with a wide boost and, voila, perfect sound!" because it's unfortunately just not that simple. So before you message me, "Aaron, I notched out so much 250 Hz out of my snare, I snapped the knob off the console, and it still sounds muddy!" just know that not all sound sources are created equal.

Sometimes a guitar cab gets mic'd up differently night to night, plus every voice is unique, and every snare drum "speaks" differently (just ask a drummer). All of these minute changes and differences can and will affect the EQ decisions you'll have to make. This is why I'm such a strong believer in ear training and learning how certain parts of the frequency spectrum present themselves outside of their source-specific applications. That being said, **these tips can be helpful as a place to start your search, but are not gospel by any means.** So without further adieu, let's begin.

A subtractive approach to EQ



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Not everyone's ethos on EQ is the same, and most people may never see eye to eye on EQ approach. That being said, I come from the camp that **subtractive over additive tends to be better for your mix in most cases**. Now, I'm not saying to live in a strictly subtractive world; I do make boosts from time to time when needed or appropriate, but it's probably a 3:1 or 4:1 ratio of cuts to boosts.

Also, a quick note on the topic of high pass filters: use them. They can be your best friend, but be careful as they're a double-edged sword. HP filters can quickly clean mud from your mix and open things up, but too much can lead to a thin, weak-sounding mix equally as quick. When applying them, I like to come from the top down, as I find that easier to dial in properly. By that, I mean instead of rolling up an HP filter and listening until I think it's removed what I'm looking for, I start way above with "too much" HP filtering and roll it down until I feel that I have all the information on the bottom I need. I find it easier to hear the effect this way, which therefore allows me to more accurately and effectively control my low end.

Here's a detailed, instrument-by-instrument guide to EQ.

Drums



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Kick

While the snare may arguably be the most vocal drum in the kit, the kick has an amazing array of possibilities for tonal shaping. In many ways, I think you can really measure an engineer/mixer's abilities on how a kick sounds and how it sits in the mix.

- **40 to 60 Hz - Bottom:** The tone of the reverberation in the shell, sometimes too rumbly, can be undefined/indeterminate depending on the mic'ing/speakers
- **60 to 100 Hz - Thump:** The "punch you in the chest" range of the kick
- **100 to 200 Hz - Body:** This is the "meat," if you will, of the kick sound
- **200 to 2,000 Hz - Ring/Hollowness:** This large band is where you can often find issues with ringing and muddy kick sounds
- **2,000 to 4,000 Hz - Beater Attack:** This is the range to look for the "thwack" sound of the beater, critical for getting that "basketball bouncing" kick sound

Snare

- **200 to 400 Hz - Body/Bottom:** The central fundamental of most snares tends to live somewhere in this range
- **400 to 800 Hz - Ring:** This is the range that tends to give that hollow "ring" to a snare tone that's often undesirable. Crush this range too much, though, and your snare will start to lose some life and sound two-dimensional in the mix

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- **2,000 to 4,000 Hz - Attack:** The stick on head "crack" is often found around **8,000 Hz (Sizzle and Snap)**. The overtone sound of the snares themselves can either be accented or dampened somewhere around this point

Toms

- **100 to 300 Hz - Body:** Depends on tuning, but a good place to look for the "boom" of a tom sound. Too much and things will sound, well, "boomy." Remove too much, and your toms will sound like cardboard boxes
- **3,000 to 4,000 Hz - Attack:** Just as it sounds, this is the the attack of the drum itself from a stick on its head

Cymbals

- **200 to 300 Hz - Clank:** Here's where, especially on your hi-hats, the "chink" sound of the cymbal lives. As always, season to taste
- **6,000 Hz and up - Sizzle:** This range is where the "tsssssss" part of the cymbals can be brightened up to add some more life and "air" to a cymbal wash, or you can spontaneously start bleeding from the ears if used without prejudice

Synth "Kick" (808)

Ah yes, the 808. It's often used and referred to as a kick, but it tends to act more as a very low tom, as it has a pitch. This thing is the Loch Ness Monster – there tends to be more under the water. The best way to deal with a true, clean 808 sample is to work around it. It's usually best to let the 808 do its thing and to get the bottom end around it the hell out of the way. If it's a fuzzy sample or has been driven and squashed, you may need to play with things above 250 Hz, but usually live and let live is the best approach.

Bass



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The reason the kick and the bass tend to be mortal enemies in many mixes is they can literally occupy identical sonic space from a frequency perspective. So before reaching in with any EQ, listen to both and decide where one will take the lead over the other, and in which ranges.

- **40 to 80 Hz - Bottom:** Especially with five-string variations, this is where the bottom resonances of most basses live
- **80 to 200 Hz - Fundamentals:** The primary fundamental of the bass. Right around 180 to 200 Hz is where you can try to cut in on a bass that is too "boomy" to clean it up while preserving

fundamentals

- **200 to 600 Hz - Overtones:** These are the upper harmonics of most bass tones, depending on the sound you're interested in. If you're having trouble getting a bass to cut through in a mix, especially a low-end heavy one or one that's getting played back on smaller speakers, this can be where to look
- **300 to 500 Hz - Wood:** Particularly in upright basses, it's that distinctive, woody bark
- **800 to 1,600k Hz - Bite:** The growl and attack of most basses can be either emphasized or toned down around here
- **2,000 to 5,000 Hz - String noise:** Pretty straightforward here, I think

Guitar



Image via youtube.com (<http://youtube.com>)

Acoustic

- **120 to 200 Hz - Boom/Body:** This is where you'll find most of the explosive low end on a mic'd acoustic that tends to feedback in the live world or be disruptive in the studio. A little bit here adds warmth and fullness on a solo performance, but in a dense band mix, it's probably better to get it out of the way
- **200 to 400 Hz - Thickness/Wood:** This is the main "body" of most acoustic tones. Too many cuts here, and you're going to lose the life of the guitar somewhat
- **2,000 Hz - Definition/Harshness:** This double-edged sword band will give the definition to the acoustic tone to hear intricacies in chords and picking, but too much will make it harsh and aggressive
- **7,000 Hz - Air/Sparkle:** A touch, and I mean a *touch*, of a shelf boost here can help open up an acoustic sound

A note on acoustic guitar pickups (piezo, in particular): Making crazy 10 dB cuts?

Contemplating making some absurd boost? You're probably not wrong – the acoustic pickup world can be the Wild West when it comes to tone. Some are great, and some are downright questionable. There are too many variables to even begin suggesting frequencies, so use your ears to guide you home on this one.

Electric

In general, I find a light hand with broad strokes to be most effective on electric guitar, if any EQ is applied at all other than some filtering. If you do decide to go hunting, however:

- **80 to 90 Hz and below - Mud:** Lose it, crush it with your HP filter. There's pretty much nothing useful down here, and it will almost always just equate to flabbiness and noise in your tone
- **150 to 200 Hz - Thickness:** This is where the "guts" of a guitar normally come from, but again, can quickly cloud a mix on you. Use sparingly, perhaps automate to add sweetness to a solo section or an exposed part, and then tuck it away when things thicken up again
- **300 to 1,000 Hz - Life:** I call this the "life" of the electric, as many of the things that make an electric sound like an electric live in this range. So attenuating needs to be taken into consideration carefully. Too much though, and you start fighting with your snare and things like that, so take note
- **1,000 to 2,000 Hz - Honk:** This is where honky and harsh characteristics can usually be

smoothed out with a wide cut centered somewhere in this range

- **3,000 to 8,000 Hz - Brilliance and Presence:** This is the range that can add shimmer or allow a guitar to cut through a mix when boosted. It can also be where you make cuts to keep a guitar from conflicting with a vocal. If making boosts in this range, keep an eye (ear?) out for noise, as any noise present from distortion/effects pedals will very quickly be accentuated as well

Keyboards



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Piano

When looking at acoustic pianos, there are so many variations that can lead to differences in tone: upright vs. grand, hammer types, mechanical condition, the player, mic choices, and mic techniques. No matter what, though, the piano tends to be a behemoth in the mix – for better or worse – so most often you'll be looking to cut holes out for other things in your mix.

- **100 to 200 Hz - Boom:** This can be a great place to add a little warmth to a solo piano in a studio environment, but more often than not will be the first place to cut some of the girth in a piano in a mix or help reduce feedback potential in a live situation
- **3,000 Hz and above - Presence:** Adding a little "air" here can be great to brighten up a dark piano tone, depending on mic placement. Be careful not to bring out the noise of dampers on strings (particularly in the 3,000 to 5,000 Hz range), as this can quickly become distracting and jarring

Electric Piano (Rhodes)

If we're dealing with a real electric piano over a sample, things can be very situational as amp, mic'ing, and condition of the instrument itself can play such a huge role.

- **100 to 200 Hz - Boom:** As with its acoustic counterpart, the low end can go from lush to overgrown Jurassic underbrush quickly. Particularly with the rich, dense harmonics of something like a Rhodes, cutting "mud" is usually your first order of business
- **800 to 1,000 Hz - Bark:** Managing the "bark" and damper noise can sometimes be an issue, but if things are cutting through too much, odds are it's somewhere in this range

Clavinet

Honestly, I find myself treating this similarly to electric guitar, which is fitting considering the method of sound production. There are some idiosyncrasies to navigate with the attack that set it apart from its shoulder-slung brethren, but many of the same principles apply.

Organ (B3)

Much of a B3's magic comes from good mic placement and the player (the right drawbar settings are *game changers*). EQ should be applied sparingly and mainly as a corrective measure. Usually it's good to look to **anything clashing with the bass (80 to 180 Hz)**, and if it's feeling a little "chubby" in the middle and either can't get out of its own way or doesn't play nice with other mid-heavy instruments or guitars, **look to make cuts somewhere between 300 to 500 Hz**.

Synths

While the near-infinite possibilities in the synth world can make this a hard one to generalize, there are some places you may start to look:

- **400 to 600 Hz - Thickness:** Many synth sounds can get kind of muddy in this range and mess with the clarity of the sound itself, especially when you start layering multiple synths. Searching somewhere in this range is a good place to start
- **1,000 to 2,000 Hz - Cut/Bite:** This is where you can usually find the attributes of a synth patch that are going to help it poke through the mix. Cut here to help tuck something back and out of the way, from guitars to vocals
- **3,000 to 4,000 Hz - Presence/Clarity:** Also like voice and guitar, this range helps add excitement to a sound. And also like just about everything else mentioned here, too much of a good thing can be painful

Horns



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Saxes

- **300 to 400 Hz - Honk/Woof:** This somewhat depends on what type of sax we're dealing with, soprano to baritone. As we go lower, this point is also going to move lower
- **1,000 to 2,000 Hz - Squawk:** Again, the type of sax itself may cause this point to float a little more, but you can cut the "parrot on a 'roid-rage bender" tendency of some instruments here
- **6,000 Hz - Reed noise:** As saxes generate sound from a thin piece of wood vibrating in an air stream, there's a noise that sometimes accompanies this. Right around this point is where to start looking for that vibration

Brass

This can be applied to all brass in general, but particularly with trumpet and trombone in mind.
 Music Business 101 (<http://blog.sonicbids.com/topic/music-business-101>)

- **100 to 200 Hz - Boom/Mud:** This is particularly pointing at the trombone, as it sometimes shares the range of the bass and the rest of the rhythm section, but rarely functions in that purpose. Getting it out of the way is usually best, as this range will serve little except to cloud most mixes

Musician Success Guide (<http://blog.sonicbids.com/topic/musician-success-guide>)

- **4,000 to 10,000 Hz - Brightness:** This top end can brighten up a dark horn section. However, trumpets can nearly take someone's head off in this range with a good *blat*, so managing this band is key here

Vocals



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The human voice: simultaneously one of the most fickle and yet most important pieces of any mix. Male voices, though typically lower than female, are actually more complex in their overtone structure, meaning that at least equal attention needs to be paid to the high end of a male vocal as a female.

- **100 Hz and below - Rumble:** For most vocals, all you'll find down here is mic-handling noise, stage/floor vibrations, air conditioners, etc. Get rid of it
- **200 Hz - Boom:** This frequency is usually where you'll find the "head cold" sound. The female voice may run a little higher, but this is the ballpark. Anyone with allergies or sinus issues knows exactly what I'm talking about
- **800 to 1,000 Hz - Word Clarity/Nasality:** Not enough and intelligibility of some lyrics may be unintelligible, too much and you get the teacher from *Peanuts*
- **3,000 Hz - Presence/Excitement:** This is right around the point that tends to add some energy, or some "buzz" to a vocal. Not enough, and the vocal may sound deflated, flat, and dull. Too much, and your listener will feel like he or she is getting poked in the ear canal with a chopstick every time the vocalist opens his or her mouth
- **4,000 to 8,000 Hz - Sizzle/Sibilants:** Typically this is the range a de-esser is handling. If your vocalist sounds like meat hitting a hot pan at the end of any word ending in "s" or a similar sound, this is where to hunt
- **10,000 Hz and up - Air:** Want to "open up" your vocal a little? Apply a light shelf boost around here and that should do it. This is not always necessary, though, and simply adding "air" for the sake of it can make things harsh, brittle, and introduce noise to the sound

For more tips on getting the best sound every time, check out more from our resident "Angry Sound Guy" (<http://blog.sonicbids.com/topic/angry-sound-guy>)."

Aaron Staniulis is not only a freelance live sound and recording engineer, but also an accomplished musician, singer, and songwriter. He has spent equal time on both sides of the microphone working for and playing alongside everyone from local bar cover bands to major label recording artists, in venues stretching from tens to tens of thousands of people. Having seen both sides at all levels gives him the perfect perspective for shedding light on the "Angry Sound Guy." You can find out more about what he's up to at aaronstaniulis.com (<http://aaronstaniulis.com/>).



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sdialect • a year ago

Shocking to see these "pros" rip this article apart. This is a reference and learning tools to give you an idea of where each instrument is on the spectrum. In time the new guy will "just know" but that comes from getting all the information about the task at hand, applying it and tinkering with it to see what does what. I hate when a "100 year pro" acts like the guy that just started a few months ago should suddenly have all the knowledge they have or quit...pure snobbery at it's finest. Help or go back to your cubbyhole and shut it I say to those types.

13 ^ | v • Reply • Share

John_Eppstein → sdialect • a year ago

Why is it shocking to see somebody with experience criticize a simplistic way of approaching the art that does a disservice to the student?

Here's an analogy - when you're teaching somebody to paint, you don't start him out with a paint-by-numbers coloring book, you teach him about form, color, and how to look at things.

The internet is full of "paint-by-numbers" tutorials about audio, which prospective students memorize and apply without really listening to what they're doing. That isn't helping them learn to listen critically and doesn't further their ability.

Unfortunately, critical listening isn't something you can distill into a one-page guide, it's something that needs to be developed over time. Rote "guides" just get in the way - they tell you "what to do" without understanding why you're doing it, and in most if not all cases generalize to the point of uselessness.

In this case, the article gives the impression that EQ is the key to good

[see more](#)

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brokowski → John_Eppstein • a year ago

when i started painting i used paint by number, your point is pretty invalid

6 ^ | v • Reply • Share



John Eppstein → brokowski • a year ago

Perhaps you did. However I seriously doubt that you'll find paint by number used as a teaching aid or method in any accredited art school and I really, really doubt that many, or any acclaimed artists started out learning to paint with a paint-by-number set unless they were fairly small children at the time.

Just out of curiosity, are you a "serious" painter? By "serious" I mean the kind of painter whose work is found in actual art galleries?

The problem is that things like that and the topic at hand actually divert people from achieving a real understanding of a given art. It also tends to distract people from learning to use and trust their senses, which is key to success in any artistic field.

If you always boost this and such or cut this and that on a given sound source because you read somewhere that "that's

[see more](#)

3 ^ | v • [Reply](#) • [Share](#)



dEMC2 → John_Eppstein • a year ago

well common sense, and skill should be used, but this is just a guideline of usual suspects. calm down, bro. To become a great audio engineer it will take time and practice, but this list helps someone who might not know otherwise, what areas to look at. This is what they teach in audio engineering school.

6 ^ | v • [Reply](#) • [Share](#)



John Eppstein → dEMC2 • a year ago

Most "audio engineering schools" aren't worth the paper their magazine ads are printed on. There are exceptions but in general those schools rely on that sort of approach because they don't have adequate facilities or competent staff to teach the subject properly. You can't teach audio engineering in a classroom. There are programs at some real universities and public colleges that are quite good, but the places that are "audio schools" (including some very well know ones) are simply mills for separating gullible students with stars in their eyes from their money (either fleecing the parents or leaving the kid with an immense student loan debt that he'll probably never pay off because there are hundreds and hundreds of "graduates" from those "schools" for every available job in the field - and most studios would rather train somebody from scratch rather than having to correct misconceptions taught by bogus "audio schools".

4 ^ | v • [Reply](#) • [Share](#)

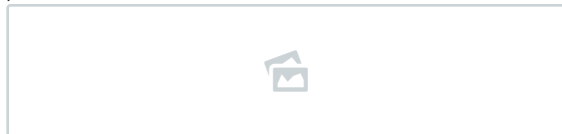


Mark Farrell → John_Eppstein • 6 months ago

Exactly.

Every chamber is different, every sound system, every microphone (models), personal singing habits.

It takes patience and a good ear to get it right...lots of patience.



1 ^ | v • [Reply](#) • [Share](#)



HBMARTE → John_Eppstein • 7 months ago

You're 1000% right! I lived it & I'm still in debt. Most audio schools just open up a can of worms. I became a mix & mastering engineer with hands on training plus reading some great books. Most schools are great for networking purposes in my opinion. Making/building relationships. I read "Mixing & Mastering In The Box" by Steve Savage. Awesome book & breaks everything down.

1 ^ | v • Reply • Share ›



PhilouGanJa DuB-SelecToR → John_Eppstein • 8 months ago

I think that you tell many bullshit. This article deals with the equalization generally. And he can be useful for the beginners. . Thousand of great records made with no EQ ?? Are you serious ?It is clear that if you record very good musicians, you does not need to correct a lot their sound. But equalizers are used for a long time in studios pro.. And you speak on a condescending tone, as if you were a brilliant sound engineer. What is rather funny.

^ | v • Reply • Share ›



Edward Repper → John_Eppstein • 8 months ago

Ok you should stop talking your bullshit. First of all alot of college and universities offer audio engineering and the one im about to go to school too (full sail) also starts off teaching equing like this. So pull the dick out of your ass (since your a professional which means you must make a living off of you music shit) and let us new guys learn some shit and if you think this is bad information on equing then come up with your own damn article ya dickhead! Wow your comments pissed me off and Im just learning eq.

^ | v • Reply • Share ›



John_Eppstein → Edward Repper • 8 months ago

Ed, it saddens me to hear that you think my comments are "bullshit" and that it pissed you off, but frankly I'm not too surprised because that's a common response when people are confronted with truth they don't want to hear. I'm just trying to save you and people like you what will prove to be a very expensive learning experience. Full Sail is notorious in the recording industry as a diploma mill that fleeces its students who end up with nothing to show for their investment but a worthless "diploma" that isn't worth the paper it's printed on. When you find yourself broke, unemployed, and up to your ears in student loan debt please remember my words and that there was somebody who really did try to warn and help you.

It's true that there ARE some recording programs worth attending. NONE of these are from private organizations like Full Sail, and none of them, advertise in gear mags. They are all offered by well known, fully accredited, legitimate universities with full liberal arts programs and curricula that will

[see more](#)

3 ^ | v • Reply • Share ›



OlaT → John_Eppstein • 5 months ago

This Edward dude just wasted some dollars he could use for good gears in his homestudio. Fullsail ke? Full down a waterfall, I hope you have some pixie dust!!!!🤔🤔🤔🤔

1 ^ | v • Reply • Share ›



John_Eppstein → Edward Repper • 8 months ago

In professional circles, Full Sail has the reputation of being a

diploma mill that extracts large amounts of money from gullible students with promises of industry jobs that don't exist, while presenting a course of instruction that in reality leaves the students poorly equipped for a real studio job and saddled with crippling student loan debt.

If you really MUST go to "recording school" go to a program offered by an accredited REAL university or college that offers a general liberal arts program in addition to the recording classes, because if you go to a "recording school" you'll end up with a diploma that isn't worth the paper it's printed on. Go to a real college and take a second major (or at least a minor) in a field you can fall back on when your audio aspirations fail and you eventually get fed up with eating ramen.,

A great many commercial studios won't hire graduates of those private "recording schools" because they'd rather train

[see more](#)

1 ^ | v · [Reply](#) · [Share](#) ›



[amac](#) → [John_Eppstein](#) · 8 months ago

Weird, I go to Full Sail as an Audio Production Student, almost finished, and I am very happy with the education I am getting. They do not promise a job in the industry as you say. As for being left poorly equipped, if you know anything about the industry, at ANY rate, you should know, no one cares about a degree or what school you went to. What DOES matter is what you do with the education you are given, and the proof is in the production. Since you seem to know everything about music, why are you sitting on your computer throwing negative energy around on blogs instead of making music. I just chimed in because you are ignorantly bashing a good school you know absolutely nothing about.

^ | v · [Reply](#) · [Share](#) ›



[HBMARTE](#) → [amac](#) · 7 months ago

He's not bashing anyone. The funny part about this whole conversation is that he's right for the most part. But I'm also not knocking the fact that these articles are extremely useful to "the right individual". The student who doesn't just go by numbers but understands that it's meant to be a reference point & trusts he's/her ears to make all the critical decisions. BUILD & ALWAYS TRUST YOUR EARS to do most engineering work. Numbers can only get you so far.

1 ^ | v · [Reply](#) · [Share](#) ›



[John_Eppstein](#) → [amac](#) · 8 months ago

All I can say is that you'll find out.

1 ^ | v · [Reply](#) · [Share](#) ›



[Jay Danger Godin](#) → [dEMC2](#) · 3 months ago

This is very similar to what was in my class at Berkley. A range of freq and why you would look there. But you also use your ears! Why people gotta freak out over something so moot.

^ | v · [Reply](#) · [Share](#) ›



[brokowski](#) → [John_Eppstein](#) · a year ago

And no, my art has never been in a gallery, I haven't taken it further than designing company logos. But my mother, who homeschooled me, has gallery showings. You know where she started me at?

Oh yeah, paint by numbers.

2 ^ | v · [Reply](#) · [Share](#) ›



John Eppstein → brokowski • a year ago

Home schooled, eh?

Well, that does explain quite a bit, then, at least concerning your experience with educational methods. (I'm not saying that all formal schools are great, you understand, especially now with budgets cuts and "dumbed down" curricula.) (And I'm not saying your Mom didn't do a good job.)

How old were you when you did the paint by numbers?

Did your mother, who has had gallery showings, learn by doing "paint by numbers"?

I doubt it.

Paint by numbers is something that moms give their kids as a "creativity toy", but I've never encountered anyone who would seriously suggest it as a basis for learning to create art.

Give the kid a paint by numbers set. If he takes to it, then you

[see more](#)

1 ^ | v • Reply • Share ›



brokowski → John Eppstein • a year ago

I didn't know you all were taught tonal frequencies in kindergarten. Looks like I missed out on a lot of public education.

1 ^ | v • Reply • Share ›



John Eppstein → brokowski • a year ago

Where did you get that? Seems you're posting answers to your own assumptions, not what's actually being said.

You also appear to have a problem differentiation between a toy for small children and an educational tool or process for (nominally) adult people.

1 ^ | v • Reply • Share ›



Rob → John Eppstein • a year ago

You are genuinely too fukkin' full of ASSumptions to even continue paying attention. Shit...fuck you. Blocked. I literally don't want to see you anywhere using Disqus.

^ | v • Reply • Share ›



John Eppstein → Rob • a year ago

Great news. Now I won't have to put up with your asinine comments.

2 ^ | v • Reply • Share ›



hahaha → John Eppstein • a year ago

u talk like a kid

^ | v • Reply • Share ›



Tom Forsythe → John Eppstein • a year ago

The author makes it quite clear from the outset that you should use your ears, and only look at his suggestions as a guide. Most of the people reading this will never become pro mix engineers.

1 ^ | v • Reply • Share ›



ArtMofo → John Eppstein • a year ago

Apparently you never went to school for art. lol...Either way proper mic placement and a good ear is crucial, but what

happens when you get shit wrong? Well then you kind of need to learn the basic shit to salvage something.

^ | v · Reply · Share ›



DAMION → John_Eppstein · a year ago

You are correct that a simplistic application of EQ "because someone told me" is not professional quality. It can be a stepping stone, articles which give exact frequencies should be clear that they are only a starting point not the destination.

^ | v · Reply · Share ›



John_Eppstein → DAMION · a year ago

The thing is that instruments (including vocals) may have resonant "hot spots" at various frequencies. Not all acoustic guitars have the same response, "sweet spots" or "wolf tones". Not all snare or kick drums have the same natural (shell) resonances, and those natural resonances are altered, often quite strongly, by choice of heads and tuning. And a particular drummer's technique can radically alter the sound of a drum or the entire kit.

There are too many variables to distill it down to a simple chart - the odds of any given recommendation being wrong (or at least not close to optimum) are far greater than being right.

It's a far better thing to teach people how to use a variable EQ to zero in on the exact (more or less) frequencies that are appropriate for each given source.

Sure, you can give people guidelines on what is a good rough area to start searching in for various sources, but to claim you have "an "ultimate" cheat sheet for every common instrument" is both wrong and counterproductive.

"Cheat sheets" are for cheaters and cheaters get what they deserve. Far better to teach people to LISTEN. (Of course that's not as easy and you have to actually know what you're doing.)

2 ^ | v · Reply · Share ›



Brian_Aylwin → John_Eppstein · 5 months ago

John, research tells me you're actually kind of talented... but, why come on here and call everyone out? Instead of creating animosity and a comments string longer than I care to read, why don't you impart some of your knowledge as this article has? I've looked everywhere for top producers/mixers/engineers tips etc but they're more scarce than hens teeth. What you're doing is counter productive and more harmful than this article ever will be. Help us newbies out, we're here to learn, so teach us!

^ | v · Reply · Share ›



John_Eppstein → DAMION · a year ago

It can be a useful stepping stone if properly presented, and with a bit of additional information as to the limitations of such listings.

However I didn't find that it was presented in this manner and, indeed, was simply somebody parroting simplistic information gleaned from aq similar source, without imparting much in the way of real understanding of how to use eEQ in an artistic and constructive manner.

It's like the blind leading the blind (Of which there is much on the internet.)

It also speaks to the "preset mentality" where many people are

It also speaks to the "preset mentality" where many people are looking for easy, canned answers so they don't have to bother thinking (and listening) for themselves. That's not the way to learn. Many of the engineers I know might use a preset as a quick "roughing in" to save a little time but it's always altered to fit the program material. It's never the real answer.

[see more](#)

2 ^ | v · [Reply](#) · [Share](#) ›



ParacosmOfficial → [John_Eppstein](#) · 3 months ago

I've been reading this and I'm quite late to the party so whatever but I wanted to say that a lot of these points are very valid and I like that you have delivered some additional advice on how to tweak the "Preset" of the original article.

I myself took the "build it and put your face in it" approach and as a long-time player turned engineer (originally because I simply couldn't afford brick & mortar and was infatuated with the thought of doing it, yadda yadda). What I wanted to piggy back on is the importance of using your ears. Its how I learned to play guitar and its my approach to tracking and mixing. I'm just a home level dude but I will say that when I use EQ I usually set a notch, then sometimes actually close my eyes, listening for that "spot" and then bring it back down to earth. Same with plugins and all the various applications like comp/limit, reverb, modulation, you name it. I typically pull something up and cycle through a few presets and see if it has the color or flavor I'm looking for, then tweak to flavor from

[see more](#)

^ | v · [Reply](#) · [Share](#) ›



DAMION → [John_Eppstein](#) · a year ago

"certifications", written by trained engineers? They may exist. Something like apprenticeship is necessary.

I learned by performing in the orchestra and band; it would upset me that 'non-professional's' were pop stars...

But, then, some people see music more like "background painting".

Big-band and Classical, not to mention places like EMI before Rock, and the price of equipment became consumer products...

None of that takes away from having years of experience, which should be respected for what it can do - AND KNOW EXACTLY WHAT AND WHY it is doing it. There we certainly agree.

^ | v · [Reply](#) · [Share](#) ›



Rob → [John_Eppstein](#) · a year ago

Dude - wtf is your *issue*? Seriously? BACK IN ELEMENTARY SCHOOL, when we were FIRST learning, it was paint by numbers. Everything was. As the student gains a mastery and understanding of these rudimentary basics, they begin exploring and playing.

Would you HONESTLY rather someone NOT be shown these basics? Tell ya what, punk: Go outside. Put your child on a bicycle. FUCK the training wheels, right? The little bastard better get his shit together on the first run down the driveway, right? Fuck that little bastard. He can figure out how to balance that shit all by himself, right?

Man...seriously...fuck the shit outta you.

^ | v · Reply · Share ›



John Eppstein → Rob · a year ago

If I was learning to paint I'd rather be taught how to use a brush, mix colors, and perceive form rather than play with a coloring book.

But then, I'm generally interested in learning, not in playing around, if a subject catches my interest.

1 ^ | v · Reply · Share ›



brokowski → John Eppstein · a year ago

Really? Not one started with paint by numbers? They just popped out of the womb with innate knowledge and never required rudimentary introductions to color and visual coordination? Huh, interesting.

^ | v · Reply · Share ›



John Eppstein → brokowski · a year ago

Paint by numbers is not a proper introduction to color and visual coordination. Matching "color 1" to all the spaces marked "1" isn't teaching you anything. I dunno - I've heard that art programs in the schools have been gutted over the past two or three decades (thanks, Reagan!), but "paint by numbers" is really bad - when I was in school (starting in grade school) we'd be given watercolors (crayons in the first couple of grades) and paper and be told to make up our own paintings. The teachers would come around and show us things as we painted and there would be lectures on things like mixing colors and other basic stuff. I NEVER saw a paint by numbers picture in a classroom.

In 4th and 5th grade our teachers would show us things like how to do a standardized Santa Claus for Christmas cards (but not paint-by-number, we had to do it all ourselves) and how to do block lettering (for rudimentary posters) on a grid. I still occasionally use those block lettering skills for signs when doing it in Photoshop is impractical. By the time we got to 6th grade we were doing acrylics on canvas and firing pottery and copper enamel jewelry for our moms.

I'm thinking that education in the US has been seriously degraded and that kids these days are missing a lot.

2 ^ | v · Reply · Share ›



John Eppstein → brokowski · a year ago

No, people learn by being instructed by others in the profession, or by specialist teachers in the given field.

This is particularly true in the arts, where you used to serve an apprenticeship to a master (or in recording you'd get a job in a studio and find a mentor from the experienced people you'd be exposed to there. Same thing.)

Something like a paint by numbers kit might be useful to a parent who is determining a child's interests and proclivities, but anyone who thinks that you're actually going to learn anything from it is sadly deluded.

A paint by numbers kit is not, for example, going to teach you anything about shading or brush strokes or creating fine detail. You need a human instructor for that. It's not even really going to teach you about mixing colors because it just tells you to fill all the spaces with a "1" in them with color number 1.

2 ^ | v · Reply · Share ›



Jeremiah Boothe → John Eppstein · a year ago



[Jeremy Boone](#) · [John_Eppstein](#) · a year ago

The biggest problem with your argument is you're trying to tell people how they should learn and how people should teach.

I learned by experimenting with magic frequencies until I understood what I was hearing. It worked for me and I'm thankful that such a useful tool was available.

Also the Magic Frequency thing is a basic tool more akin to primary colors not painting by numbers. Blue is blue even though there is a range of blues. When you were in your art class learning primary colors for the first time were you arguing with your teacher about how she wasn't teaching you shading, brush strokes, fine detail yet even though you still didn't know your primary colors?

^ | v · [Reply](#) · [Share](#) ›



[AC33](#) → [John_Eppstein](#) · a year ago

While I agree 100% with and commend you for much you've said John. There are many ways to learn. For instance, how did you learn to speak? Did you find instruction by others in the profession? Maybe. Though most would say that they learned from being immersed in an environment conducive to learning (english for example) from their parents as a child. You hear words and are exposed to it on a daily basis. At first you make mouth noises and get frustrated at your attempts to emulate what mom and dad are doing but eventually you have your first word. Though more advanced instruction awaits down the road.....No toddler ever set aside a certain amount of time to practice the english language. They were living in it. If only to get a start on it. Another example would be this fascinating guy Wim Hoff "The Iceman" who learned to control his physiology from submerging himself in freezing temperatures and from there, learning a way of breathing to help access the endocrine systems in the brain which has allowed him to hike Everest in just shorts and boots. He has

[see more](#)

^ | v · [Reply](#) · [Share](#) ›



[Andy Ibarra](#) → [John_Eppstein](#) · 4 months ago

I had no clue AT ALL what to do with eq before I read this.

It's a good starting point, but its definitely not a be all end all means of learning production.

It was however very helpful showing me where to start, and experimenting with this knowledge as a basis is what strengthened my ability to listen and ACTUALLY have an understanding of what I was doing.

Anyone who's serious about production isn't going to just stop learning because they read a chart. Its hard to build a house without a foundation.

^ | v · [Reply](#) · [Share](#) ›



[charlie marshall](#) → [John_Eppstein](#) · 7 months ago

I rarely use EQ, but it IS essential to know this. I prefer to mix on the basis of balance, then EQ when necessary.

Pip Williams, one of my University lecturers with TONS more experience than any fucker in the industry, with names you will know, produced one of these for us. He knows that it's not the MAIN way to get a clear mix, but it IS essential knowledge to understand. I now know that, too.

No ONE is saying it is a necessity to USE, but it is almost certainly a necessity to KNOW; so you understand that when there IS frequency masking, you know how to fix it. Moreover, it allows you to make the right choices of microphones for both ease of mix and style of track

right choice of microphones, for both ease of mix and style of track.

It is nothing but your assumption that they're saying 'EQ is the key to good mixing'. That is the only fallacy here.

^ | v · Reply · Share ›



James Coulter → John_Eppstein · a year ago

With all due respect, Mr. Eppstein, I think you've missed the point of this article, and I suspect maybe it's due to what you seem to consider a poor choice of titles - in particular the use of the term "cheat sheet".

If I may, I think your equating this to a paint-by-numbers approach to sound is not at all accurate. Paint by numbers is a "you do it this way, every time, or it's wrong" approach to painting. If that were what this author was stating, he would have said, "this is the way to do it every time." However, he actually said quite the opposite. His third sentence stated very clearly:

"...I offer you the fine print: These references are general ideas for where to begin to look for sonic issues with particular sounds, instruments, and voices. I'm not going to tell you "always notch this 9 dB here and add 3 dB here with a wide boost and, voila, perfect sound!" because it's unfortunately just not that simple. So before you message me, "Aaron, I notched out so much 250 Hz out of my snare, I missed the trick of the snare and it still sounded great!" first

[see more](#)

^ | v · Reply · Share ›



Mickey Noble → James Coulter · 8 months ago

There's so much change taking place in the music industry, the old way of getting hired at studios by sweeping the floor first is no longer the norm.

The people I know who are successful at it usually work out of their own studios, since it no longer costs millions to build a legit studio. Some stages might take place at larger studios such as tracking, but a mix nowadays can be transferred between a lot of different studios for different stages, so much of it can be done on a laptop with the right peripherals.

You can gain a lot of this knowledge at recording schools, but it's only valuable if you are currently working hands on at the same time. Many people are studying also who don't plan on becoming a pro mixing engineer, but want to be a producer, or musician who has a wide range of knowledge.

Many people fail who go to recording school because they have the wrong goals or approach, or even attitude towards life and success. It's not an easy industry to go into if you want to make money. However, the recording schools do their job of giving you knowledge, it's up to you how you want to use it.

^ | v · Reply · Share ›



KevAA → John_Eppstein · a year ago

Your so negative! I feel sorry for you man... you bring down, and add so much negative to the engineering world. I hate being told I work in the most angry profession, but you make so much validation to that statement. Retire already you grump!

^ | v · Reply · Share ›



John_Eppstein → KevAA · a year ago

I'm not negative at all. I'm just trying to impart some of the knowledge I've gained in approximately 55 years as a n audio mix engineer.; If you choose to disregard that in favor of random posts on the internet from people with no real history

random posts on the internet from people with no real history, fine, it's your loss.

1 ^ | v · Reply · Share ›



KevAA → KevAA · a year ago

It's about experience. you would be surprised at how many "professionals with years of experience" don't know how to eq a kick in relation to the bass guitar... so those "loose guides" are valid. I bet I could criticize and point out flaws in your workflow until the shows over and your blue in the face.

1 ^ | v · Reply · Share ›



John Eppstein → KevAA · 8 months ago

The thing is that every kick drum is different, not to mention the fact that kicks drums are tuned over a fairly wide range of pitches depending on the style of music, the drum, the type of beater, and the taste of the player (and/or the producer on the session). Furthermore kicks with an intact resonant head are much different than kicks with no front head, with those with a hole being somewhere in between. There's also the matter of the type of mic(s) and placement.

When I mic a kick I try to get the sound with mic placement, not EQ, and usually get at least very close. If, after getting the mic placed correctly, I feel the need for further adjustment I enable the EQ on the board and sweep the frequency knob until I hit the point that needs adjustment FOR THAT PARTICULAR DRUM, that's appropriate for THE KIND OF MUSIC BEING RECORDED on that session. For example, I would never EQ a kick drum for metal the same as I would for country music, and I wouldn't EQ a drum for traditional jazz

[see more](#)

1 ^ | v · Reply · Share ›



John Eppstein → KevAA · a year ago

"Years of experience"?

Are you kidding me? (probably not, which is really sad.)

I started in audio in the mid '60s. Have any of your so-called "experts" been in the field that long? I seriously doubt it.

There is so much garbage on the ionternet5 from self appointed "experts who have no real experience it";s disgusting.

I'm not going to tell you all of who I've worked with because I'm tired of monkeys telling me I'm a liar - which I'm not. I'll give you one - Ross "The Boss" Friedman (Dictators, Shakin' Street, Manowar), who is on Facebook. You can ask him about me. Maybe he'll deign to answer you. Maybe not, I wouldn't blame him.

Go eat a banana.

1 ^ | v · Reply · Share ›



Kenneth Nielsen → John Eppstein · a year ago

Many people have different ways of teaching basic concepts in recording or live sound. You can publish your own method if you wish. It would be a more useful way to make your point rather than criticizing someone who has actually done the work to help others. Actually now that I see your many, many posts in this comments section I see you are trying to publish your own "method" by piggybacking onto an article written by someone else. And judging by your condescending, argumentative way of making sure everyone knows that you are THE authority on all things audio and artistic,

what a fine teacher you are. Good thing we are getting all this knowledge for free, otherwise we might wonder exactly who you are, who you've worked with, and what references we might find for you before plunking our money down to listen to you. Funny how everything you say about the problems with most audio engineering schools and articles like this one are perfectly illustrated in your, because I say so statements you keep posting and posting. Your blustering and bullying attitude is the reason most beginners are hesitant to ask questions. They may get ridiculed and torn apart by a pro such as yourself. Can't find a place where your peers will welcome you? No, you must write post after post to make sure that you put the world to rights as you see it. This article has an author's name attached. Perhaps you can direct us to your published articles other than comments.

^ | v • Reply • Share ›



Lucky seven Sampson ↗ John_Eppstein • a year ago

<http://wundergroundmusic.com/s...>

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