EDM as Timbre Learning Lab

Thanks for coming to my talk! Please scan the lesson plan QR code to save as your take-home from this talk. You don't need to reference it while I'm speaking, though. And if you're having trouble seeing the presentation, you can scan the Slides QR code or go to presentations dot Megan Lavengood dot com and find this there.

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Inspiration

Legendary timbre scholar Cornelia Fales wrote a book chapter in 2018 that used the archives of a listserv to perform digital ethnography on a group of 1990s ravers.

`CLICK` Her article discusses a connection between the fringe status of EDM (at the time at least) and its "nonspecificity." She documents that these EDM listeners prioritized nonspecificity in their timbres by preferring timbres with ambiguous or disconnected sound sources, and rejecting vocals with meaningful lyrics as distracting and disruptive.

Citing perception studies, Fales argues that the musical features of EDM actually promote and support timbral attentiveness. This is important for pedagogues of timbre: by de-emphasizing more familiar domains of focus, we can more easily get students to pay attention to timbre. `CLICK`

As a bonus, it turns out that according to Fales's research, listening in this way can improve one's appreciation for EDM. It's true that much EDM lacks vocals, easily-identifiable instruments, and some music theory comfort objects like teleological progressions. This can make EDM seem hard to understand, but if we learn to hear in this new timbre-focused way, we would be hearing more like the EDM community would. `CLICK`

Timbre in EDM Learning Module

Fales's chapter inspired me to come up with this module dedicated to learning about timbre and texture through EDM. I've broken it into four lessons, which you can see enumerated here.

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These are conceived as 75-minute lessons, since that's how long my classes are at George Mason. 75 minutes is kind of long, so I am always getting students involved in hands-on practice with the concepts by halfway through the lesson. That's a pattern you'll see throughout these modules.

The lessons are accessible for non-majors, since timbre and texture don't depend on music notation or an understanding of tonality. But they would be just at

home in a core theory class. I would teach this in my pop and jazz class for undergraduate music majors, but again, since it doesn't require understanding notation or tonality, it can fit anywhere in your curriculum.

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So to explain my reasoning behind this sequencing:

CLICK First: texture in pop music. We're gonna start with texture because it's very concrete. It's very easy to pick up on and it's simpler to describe. I find that a lot of students already have a good intuitive understanding of texture in pop music just from their experience listening to it throughout their lives.

CLICK Then, talking about texture leads naturally into talking about timbre, especially if we're going to analyze texture in EDM. Since EDM uses a lot of sounds that don't have a clear sound source, it becomes meaningless to talk about instruments, and instead we need to talk more precisely about timbral effects.

CLICK The third and fourth lessons are really where the critical pedagogy aspects take center stage. Here, we stress test the concepts of timbre and texture that we've already established by focusing specifically on unpitched percussion. And what we find is that we've developed more robust terms for discussing texture and timbre as it pertains to *pitched* instruments, and that *unpitched* instruments force us to refine and reconsider some of these definitions. And again, you'll see that these are the lessons that will really support our critical pedagogy mission, because they're the lessons that involve the most critical thinking from the students.

Today, I'm not gonna have time to walk through each of these lesson plans in detail. I'm going to be very brief about these first two lessons.

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1. Texture in pop music

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You may already be familiar with my work on this subject. I like Allan Moore's system of four functional layers, and I added a fifth layer, the novelty layer, in a 2020 MTO article. Together, these five layers are **explicit beat, functional bass, harmonic filler, melody, and novelty.** These concepts are honestly not that difficult to catch onto even without formal definitions and theorizing, and you can read about it more elsewhere, so I won't go too in depth right now.

One aspect I want to make clear from the start, and that I clarify with the students too, is that texture is separate from, but intertwined with, timbre. Texture is about how instruments are working together and playing different roles in a song. But we have certain timbral and instrumental expectations for each of these layers, which is what often leads into the timbre discussions.

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In addition to the MTO article, I've written a chapter on functional layers in my co-authored textbook, *Open Music Theory.* So obviously this is a more student-oriented resource compared to the MTO article, which is for professional nerds like us.

It takes students through the definitions and examples of each of the functional layers defined by Allan Moore and myself. [scroll briefly through the chapter and definitions; if time allows, demonstrate with Vulfpeck]

This chapter is not specifically a tuned to EDM, but rather is meant to apply to most popular music genres, including EDM. But actually, I would probably *not* start with an EDM example. EDM poses particular challenges for timbre and texture analysis, as we'll see soon.

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Assignment

I've got two assignments listed at the bottom of the OMT chapter, but the one I usually pick is asking students to make a "layer graph" and analyze the texture of "bad guy" by Billie Eilish. This is mostly a pop song, but it does have a kind of EDM breakdown at the end, and yeah, your students will notice that it got a lot harder to analyze the texture at that point.

I also ask them to think up some answers to these questions:

1. What instruments make up each layer?
2. When do layers enter and exit, and how does that relate to the form?
3. Are any functional layers missing altogether? What is the effect of omitting that layer from the song?
4. How do the rhythmic profiles of the layers differ?
5. How do any of the answers to the questions above relate to genre or cultural context?

Students can then participate in a nice discussion the next day based on their prepared answers to these questions.

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Learning objectives

So by the end of the class, students will be able to:

- Enumerate and characterize five functional layers of texture in pop music
- Assign sounds to a functional layer
- Diagram functional layers in a song

- Compare functional layers between different pop songs

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Next up is:

2. Timbre vocabulary

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Texture is easier to talk about when sound sources are easily identified—when the functional bass is played by the bass, the harmonic filler is a guitar, and the melody is a vocalist.

In EDM, though, sound sources are often unclear, like you hear at the end of "bad guy". So you don't get to rely on those clean distinctions between guitar, bass, voice, and drums and their typical roles.

But when sources are unclear, this forces us to talk in terms of timbre. If everything is synth, it's helpful to be able to talk about "that noisy, dark synth" and contrast it with "that bright, inharmonic synth" or whatever.

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Lesson plan

I like to begin teaching timbre by defining it in the simplest possible terms—what makes an instrument or voice sound like itself; how we identify sound sources. And I supplement this definition by drawing out what terms for describing timbre students already know. And even non-major students know something about timbre, because every hearing person can assess timbre—it's how we tell different voices apart, for one thing.

Inevitably, opinions start to come out as students offer timbre terms and their meanings. And as disagreement or confusion arises, you can point out that different people understand these words differently, and that's why it's so important to established shared definitions.

As you might imagine, I'm partial to my own set of terms, but for more vocally-focused terms I also really like, for example, Kate Heidemann's, Michele Duguay's, or Victoria Malawey's... there's so many good timbre publications out there nowadays. The key thing is agreeing on what definitions you'll use in your classes.

If I had to pick one major issue I encountered in teaching these lessons, it was that students brought in strong feelings about the meanings of certain words that they were reluctant to let go of. And this is an issue with timbre analysis in general. People already have a vocabulary they're using to describe timbre, but it's often entirely scrutinized, and culturally dependent. A big part of this lesson is getting students to buy into the idea that a shared lexicon is useful, even if that lexicon has imperfections or limited applicability.

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So anyway, let's pretend we all bought into my lexicon. In a nutshell, I begin a timbre analysis by filling out an opposition table, which looks like this. By putting the terms in opposed pairs like this, each term clarifies its opposing term, and students when analyzing can ask about each pair "okay, is it Term A or Term B?" I've found this process to be a really clear and simple starting point for students. It's not perfect, and I talk about that in my MTO article, but it's approachable, and a great jumping-off point for deeper discussion.

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Unlike with texture, I think an EDM example can be a great starting point for discussions of timbre, for the reasons I mentioned at the start of the talk. You could use this song that Hannah used in her module, "Helix" by Flume, but anything could work here. Ideally, you would choose a song that's not too dense, and that has a broad-ranging timbral palette.

Learning objectives

By the end of the class, students will be able to:

- Distinguish terms within an oppositional pair of timbre descriptors
- Assign timbre descriptors to sound signals

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3. Unpitched Percussion Timbre

I'm going to go into more detail with these next two lessons, both of which focus on unpitched percussion and encourage students to build out from the tools they were given in the first two lessons.

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- Having ~~mastered~~ learned about timbre in the context of pitched instruments, we can see to what extent this vocabulary is useful for unpitched instruments.
- Many people tune out details of percussion; we will learn to listen closely to percussion instead
- EDM foregrounds percussion, making it an ideal repertoire to learn with

This is challenging for many people, especially musicians who have focused extensively on pitch and pitched instruments.

I deliberately said "musicians" and not "students" because this can be challenging for instructors also. But as we've mentioned, the spirit of critical pedagogy is to allow ourselves to be uncomfortable and see the students more as equal co-learners.

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Lesson plan

Preliminaries

- Define "unpitched percussion". In case you're not sure yourself, what I mean is percussion instruments that don't have a clearly perceptible pitch: things like snare drums, bass drums, cymbals, wood blocks, stuff like that. While these things may possess a pitch from a technical standpoint, they are not used in compositions to provide pitch content generally speaking.
- So if we are using my timbre vocabulary in my MTO article: what will be less useful? what will be more useful? I've found a lot of the terms to be pretty irrelevant, actually, and probably the students can identify which of these terms are not gonna be helpful.
- After a little discussion, you can distribute the customizable opposition charts, which are also included in the handout. These charts have only a few of my original timbre oppositions—*rich/sparse, bright/dark,* and *pure/noisy*—and then a bunch of blank rows which students are meant to fill in with ad-hoc terms of their own invention as we go through the lesson.

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Students will be interested to learn a little about the 909—the 808 is more famous but the 909 is another really important drum machine for EDM in particular. You can read Wikipedia about it yourself, but the short version is, the 909 was unpopular when it was released in 1983, and ended up in clearance bins at secondhand shops, where enterprising DJs, in Chicago and Detroit especially, bought them up and started using them to make techno and house music.

Since the 909 is now a legend, Roland has a cool web app emulator of the 909. So you can invite the students to pull up this website on their devices and mess around with it to get a sense of the 909's sounds and technology. It is simplified from the real 909 but for a free, easily accessible tool, I think it's pretty awesome.

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https://roland50.studio – quick demo, show what the knobs do

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This leads well into another small group activity where students work with each other to try and define the timbres of these 909 sounds.

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When you reconvene the groups back together, several issues will likely come up. One might be that there is not a good term in the old vocabulary to address the length of the decay, which is super important for describing percussion instruments—a lot of percussionists would probably call this opposition "dry versus wet."

Another issue is that students may struggle to decide which oppositional term applies if they are not certain what they're comparing the sound to. When you're analyzing percussion only, it makes sense to shift your threshold of what qualifies as "noisy" versus "pure," for one thing. The bass drum isn't "pure" compared to a good French horn tone, but it is compared to the crash cymbal.

These kinds of discoveries and uncertainties are exactly what we want to lean into in a critical pedagogy approach. It's okay not to have all the answers, and it's okay to have to revise what you initially thought as you gather more evidence and context.

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Assignment: TR-909 "Workout"

To shore up these ideas and prepare them for the next lesson, I would give them this video as a viewing and listening assignment. If your students are up for it, you could also ask students to fill in a simplified opposition table describing some of the instruments as used here. I do have a published analysis of this in a 2021 book chapter you can find in my bibliography that you can use as an answer key of sorts. Let's watch a little of it.

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Learning Objectives

By the end of the class, students will be able to:

- Distinguish terms within an oppositional pair of timbre descriptors
- Assign timbre descriptors to **unpitched percussion sound signals**

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4. Percussion's Role in Texture

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We're at our final lesson in the module. Hopefully, by now, students are now more comfortable thinking about percussion and EDM than they were when they first began.

Just as percussion problematizes our timbre vocabulary, it also problematizes the texture vocabulary, especially when we're listening to how percussion is used within EDM. In the final lesson we explore how EDM challenges automatic categorization of percussion as belonging to the "explicit beat layer."

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Lesson Plan

In the first lesson of this module, we have learned about the functional layer approach to analyzing pop music texture, which is based on work by Allan Moore and myself, and summarized in a chapter in *Open Music Theory*. Crucially for this lesson, one of the layers, the "explicit beat layer," tends to be the default category that any unpitched percussion gets put into.

But let's go back to that TR-909 workout. This is an 11-minute EDM song that uses nothing but the 909. Do we think that the song has only a single functional layer? the explicit beat layer? This is a rhetorical question—the answer is clearly "no," at least in my opinion, and the opinions of my students. Great! So this forces us to think about what conditions are necessary to put unpitched percussion instruments into other functional layers like "functional bass", "harmonic filler," or even "melody."

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Hopefully, the students spent time watching the 909 Workout and are familiar with the overall sound of the track. So you can break the students into groups and assign them a functional layer type. Ask the students to take some time to listen to the workout again and specifically think about which instruments belong to their layer. I'd also prime them with the idea that timbre and rhythm will probably have something to do with their decisions.

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As a regrouping and debriefing activity, ask each group to explain their results and their process, and to compare it to how it felt to do the same thing with a more normal pop song. My own opinion is that, especially in the absence of pitch information, whether rhythms are regular or more unpredictable has a lot to do with what layer things seem to belong to. And another aspect is timbre, particularly in the melodic layer. A key feature of vocals is the way the timbre of the voice constantly shifts as different words are pronounced. Without a vocalist—and keep in mind that much EDM lacks a vocalist—that same kind of timbral dynamism becomes important to spot in other instruments, even in percussion instruments. That kind of dynamism attracts our ears, I think, and encourages us to hear it as melodic, or at least foregrounded as a melody would be.

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Assignment: Jlin, "Hatsheput"

If you wanted, you could probably continue using the 909 Workout for the last assignment—there is so much material to uncover there. But if you're ready to mix it up, a more contemporary example is JLin's "Hatsheput." It's another very percussion-heavy song like the 909 workout, but the timbral palette is much

wider than in the 909 Workout. It's also substantially shorter. Let's listen a little.

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Whichever piece you choose, the assignment goals will be to continue to practice using the terminology established, while also remaining open to critiquing and adjusting the terminology as necessary to make it work for a good, compelling analysis of the piece. So I'd ask them to:

- Categorize instruments as belonging to functional layers
- Transcribe rhythmic motives as needed
- Use timbre vocabulary as needed
- Write a 200–300 word reflection: How did you determine which instruments belong to which layer? How did timbre factor into your decisions, if at all? What other musical domains influenced your decisions (rhythm? register? form?)?

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Learning objectives

By the end of the class, students will be able to:

- Critique the five functional layers of texture in pop music
- Analyze unpitched percussion music with functional layers

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Conclusion

It's hard for me to wrap up here, because honestly I could talk about this stuff for a long, long time. I actually made a script today instead of talking off bullets like I've been doing lately, because of my concern that I'll blow right past the 20-minute mark if I don't stick to a script! I think these topics are so interesting and valuable, for myself and for my students, and I hope I've convinced you to feel the same way.

The thing is that timbre and texture are special. They can be used to analyze any type of music—not just EDM, and not just Western Classical music, but really anything. Virtually any piece of music has a timbre and a texture. Teaching this way of listening to music makes students really flexible in how they can apply music theory going forward in their careers and lives.

It's true that timbre and texture can be difficult to teach, but our mantra with critical pedagogy is that the difficulty is part of the lesson. As much as I love putting everything in the right box like any good music theorist, the fact is that not everything in music can be fully described within a system of categories. But we don't need to throw the baby out with the bathwater, either—systems can still get us talking and provide a basis for understanding one another. By

asking students to grapple with challenging examples, they learn an important life lesson that no tool is perfect, but we can always build on existing tools to make something new and meaningful.

Thanks for listening and I hope you can take some of these ideas back to your own students.

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thank you