Sound Expertise – Episode 3

Transcript prepared by Andrew Dell'Antonio

SPEAKERS
Megan Lavengood, Will Robin

Megan Lavengood 00:00
We can sort of like retrospectively think of the 80s as, like, almost a genre to be imitated, even though it doesn't generally make sense to talk about a decade as a genre of music.

[Music] 00:11

Will Robin 00:31
So lately I've been trying to watch movies that I should have seen a long time ago, but somehow never got around to. The 1986 Tom Cruise flies planes film, Top Gun, was towards the top of my list. I'm not 100% sure why, I just knew it was one of those movies that I was embarrassed to tell people I hadn't seen. And it was right around the time that the sequel had just been announced. Anyway, my wife and I watched it, and it was fine. Entertaining, but not mindblowingly great. To be perfectly honest, I didn't really get what the big deal was. Top Gun fans, I'm sorry. But what it *did* feel like, from the very first shot until the credits rolled, was a product of its time. Somehow the movie managed to just keep screaming 80s 80s 80s over and over, no matter what was happening on screen: the dreaded Soviet MiGs, the bomber jackets and one liners, Tom Cruise's big toothy smile, the slo mo eroticism and full throttle, high fives, and of course that that volleyball scene, but also the music: from the movie's very first sound, Harold Falter Myers's gunmetal percussive synthesised score that accompanies the images of fighter jets moving at dusk, and which soon segues into the cheesy banger that is Kenny Loggins's "Highway to the Danger Zone." At a visceral, almost subconscious level, the music just says: this is the 1980s. And what makes it sound that way isn't necessarily rhythm or melody or harmony, although those all play a pretty important role. It's this other element of music that we call timbre, which we sometimes also call instrumentation, and which we sometimes also call instrumental color. It's almost... it's kind of the grain of the sound. If that sounds kind of heady, that's because it is. Timbre -- it's spelled T I M B R E -- is one of the most immediate and instinctual aspects of music. It's what makes music sound so instantly recognizable. How when you listen to a song, you can tell within almost a split second who the singer is, or what decade the music was written in. But it's also one of the hardest to pin down and actually examine, which is why I'm struggling even now to give you a good definition. And so to help me better understand what timbre is and why it matters, I spoke to the music theorist Megan Lavengood, an assistant professor at George Mason University. She wrote an entire dissertation theorizing the importance of timbre through the lens of the Yamaha DX-7 Synthesizer, which supplies the iconic bassline to "Highway to the Danger Zone," and how it shaped the soundscape of popular music in the 1980s. In her research, including a fascinating article for the Journal of Popular Music Studies, about the DX-7, as well as another project we'll talk about about the role of synthesized timbre in Sonic the Hedgehog video games, Megan analyzes how our idea of the 80s sound came into

existence. This is Sound Expertise and I'm your host Will Robin. Stay tuned for this third episode of our first season: An interview with the music theorist Megan Lavengood about timbre.

[Music] 03:44

Will Robin 03:57
Thank you so much for chatting with me. Your work as a music theorist primarily focuses on timbre and what is timbre? And I know that's like -- either a really small question or a really big question. So I'll let you kind of take maybe either or both.

Megan Lavengood 04:15
Yeah, so people who study timbre complain about this, but sometimes the easiest way to define it is in the negative. So by saying, it's what makes a violin sound different from a trumpet, for example, if everything else is kept constant, so it's not the pitch -- say the pitch is the same, the loudness is the same, everything about it is the same ... kind of what's leftover is the timbre, so that gives you kind of an intuitive sense of what timbre is, you know, it's what lets you recognize one person's voice over another even if you can't see their face. Yeah, so if we're talking about what timbre actually consists of, then we're talking about actually an acoustic phenomenon that has to do with the way sound waves kind of vibrate the air particles that then reach our ear. And in addition to that kind of, like, raw acoustic data, we have to also factor in the way that our ear distorts that data, and then how our brain and the different things we associate with different timbres kind of then further affects our perception of that timbre, so there's a lot of different angles.

Will Robin 05:27
So there's kind of like the basic like, is this a trumpet or is this a violin, and then what does that actually look like in some kind of scientific way beyond just these are different instruments that make different sounds that you can tell apart?

Megan Lavengood 05:40
Yeah, exactly. And of course, it's not like a violin only makes one kind of sound. There's lots of sounds a violin can make, so it's also just not as simple as saying ... as instrument identification, source identification is the technical term.

Will Robin 05:54
How did you end up coming to timbre as something that you wanted to explore as a music theorist,

Megan Lavengood 06:01
I was always interested in it. I think partially because I'm a singer, and it's a lot of what you think about when you're making noises as a singer. But I'm also a pianist and there you have much less control over the tambour. So I think kind of like the contrast between those two experiences was part of it. And I've always been really picky about the pop music I like to listen to, because I like love some singers but really just not like other singers. And if I don't like the singer, it kind of doesn't matter what else is going on in the music for me, I don't really like to listen to it. So one of my first ideas for a project in my master's degree was to study vocal timbre and unfortunately, I didn't get a lot of support for it at that

stage. It was a lot of, well, how is this really going to be music theory, instead of, you know, a linguistics project or something like that.... if you're studying vowel sounds isn't that really about linguistics and not ... So it was kind of shot down at that time. Later I did a project in my master's degree having to do really with instrumentation, which at the time I thought was would count as timbre. And then when I presented that paper at a conference, David Blake, who's another timbre scholar, was like, you know, there's really... it's really not the same thing to just say that you have the tambour of a violin and the tambour of a trumpet. So to return back to that example earlier...

Will Robin 07:30
I was gonna say when I teach timbre as a concept for ... like, I literally decided to just change the word to "orchestration" this semester, for music appreciation, because I was like, this is either something that's like deeply subjective in a teaching undergrads way, or it's something that's incredibly specific, and I want it to aim towards the specific things. I was like, let's call it instrumentation because...

Megan Lavengood 07:51
... it just makes things simpler. Yeah, yeah. So it wasn't until I got to grad school that I really got into, like, truly studying timbre, and it was because I had a lot of encouragement from Mark Spicer, who ended up being my advisor, to go ahead and study pop music. He mentioned that there's a huge gender imbalance within, I mean, within music theory as a whole, but then even worse within popular music studies. So he was like, I really think that you should do your dissertation on this work, and he said that timbre stuff would be really novel. And not a lot of people are doing it, which is a great reason to write a dissertation on a topic. So that's how I got there. So why ... and I want to get more into specifics of what you do with timbre soon. But why is timber something that's not so central in theory historically? Yeah, there's a lot of reasons. So the first one, of course, is that music theory tends to deal with the written score. And timbre is not very well represented in music notation. So again, we can talk about instrumentation easily from music notation, and we can extrapolate from different kinds of performance instructions how that might affect the timbre, but it's really... it's not really there. The other thing is that I really think that until the 20th century, that timbres of classical music were relatively restricted. There was a lot of focus on producing "good tone," and so, you know, a lot of wild different kinds of timbres were not part of the repertoire. And music theory, of course, mostly focuses on classical music. So classical music says, tone has to sound like this, then it just kind of eliminates a lot of variables. And there are people that talk about tone and classical music, mostly like, Emily Dolan is the biggest name. And she does a great job of explaining why, how to sort of hear in an 18th century style, the way that the timbres were used in really creative and like trailblazing ways. But, so, notation, the historically constrained tone, and the other thing is just that I think studying timbre is really difficult, because when I talked about that sort of positive definition of timbre a little bit ago, it just involves so many components of acoustics science like perception, the anatomy of the ear, and then ... there's just so many different factors that go into what make timbre sound the way it sounds, a lot of other factors that are maybe not strictly speaking timbre can influence timbre, like pitch influences our perception of timbre, even though we think of pitch as a separate thing from timbre, dynamics influence Timbre, all that kind of stuff.

Will Robin 10:37

It seems ... I'm a musicologist, so I'm going to generalize immensely here, but theory in some degree deals with something that you have to somehow find a way to quantify...

Megan Lavengood 10:47
Yeah!

Will Robin 10:47
And timbre does not seem immediately like that, although you obviously developed, and people have been developing these systems to quantify it somewhat,

Megan Lavengood 10:56
Right. Like a lot of the stuff we talk about in music theory happens on a spectrum; like pitch happens on a spectrum, rhythm happens on a spectrum. Different kind of like formal sections can be like parted out. But timbre doesn't really have a single spectrum that it lies on. You know, there's like many different dimensions to timbre and it's not just a two-dimensional thing.

Will Robin 11:17
Yeah. So let's talk less abstractly, more specifically. So you have this great recent article about the Yamaha DX7 Synthesizer and this idea that it is kind of really significant in terms of shaping how ... why we think of certain music as sounding like "80s music." Can you talk a little bit about how, yeah, like, tell me about this project and how you kind of got into it?

Megan Lavengood 11:43
Yeah, so ... actually the only other time I've done a podcast episode, with Scott Entarante, and it was called pop unmuted was the name of the podcast, so... it's not active anymore, but he did an episode asking me about 80s music and specifically about this YouTube guy, I guess that makes these 80s covers of current pop songs and the YouTube username is tronic box. And he was like basically asking me, why does this work? Like, why can you take music ... and in some ways it like doesn't work, because of course the melody and the vocal tambours are so different now than they were in the 80s. But to some degree, they do work and so he was asking how it is that even when we keep this like, you know -- at the time it was like 2015 I think -- if we take these 2015 lyrics, melodies and vocal tambours, how can we make that sound 80s through these other means, and so a lot of that, I said, had to do with the Yamaha DX7. And then from that discussion, and I started to get really interested in this idea of, like, an 80s cover, because, of course the 80s does a lot of different things, you know, hair metal, rap, and then mainstream pop and all its subgenres, punk ... I mean, there's so many different things going on. And yet there's this sound that I think especially people who were not, like, thinking deeply about music in the 80s can consider to be an 80s sound...

Will Robin 13:18
Like a stereotypical kind of timbre?

Megan Lavengood 13:20

Yeah. And I think the existence and the effectiveness of these YouTube covers kind of proves that we can sort of like retrospectively think of the 80s as, like almost a genre to be imitated, even though it doesn't generally make sense to talk about a decade as a genre of music.

Will Robin 13:37
But because these kind of sonic tropes have accumulated, we have this idea... like 80s music is like, I don't know... I went to a wedding like a year ago where it was, like, they played a lot of 80s music, like that was both a time period but also a kind of sound that like...

Megan Lavengood 13:52
Yeah, exactly.

Will Robin 13:54
So how ... what's the role of the DX7 Synthesizer in in shaping this idea?

Megan Lavengood 13:59
So the DX7 is just really, really central to so much of the music of that time period, the DX7 was released at the end of 1983. And so it really peaks, in terms of like how many recordings it's in, it really peaks in like 1985-1986. And those two years in the mid 1980s, it seems like if you pull up almost any track from that year, you can hear DX7 sounds being used on those tracks. And so even if people don't know what the DX7 is, when we talk about it, they definitely would know the sound of it, if it were pointed out to them.

Will Robin 14:37
Yeah, you talk about how, like the Billboard charts are just dominated by DX7, and George Michael, I guess is a famous, like, what are some of the songs that folks might know about?

Megan Lavengood 14:45
Yeah, so I always say the bass synthesizer, the beginning of "Danger Zone" .... [MUSIC] That's it. That's a DX7 sound. But for the electric piano sound I'd like to reference Tina Turner, "What's Love Got to Do With It," it's always playing these chords throughout the whole song, it's really easy to hear. [MUSIC]

Will Robin 15:11
And so how did the DX7 come to kind of infiltrate pop music to this degree in this period?

Megan Lavengood 15:18
So a lot of it is that it was a really affordable synthesizer for what it offered. So of course, throughout the 80s, and really, it's still today, the price of like computer parts has just plummeted through time. And the DX7 is one of the first digital synthesizers meaning that it does make use of a computer in its sound processing. And so it was able to do a lot of stuff really cheaply compared to the analog synthesizers which involve more hardware, like actual electrical signals and oscillators and all that good stuff. So it was just really accessible compared to a lot of these other things. So basically anyone could pop over to their music store and get one of these synthesizers for their garage band; for their, like lounge act; or

whatever. And so even in ... but it goes beyond like garage bands, because even in these studios, they were using them too, just because of the wide variety of things they could do. And then the interesting thing to me about the DX7 is that people found it really, really, really difficult to program, because the kind of digital synthesis it uses is really based in like some difficult mathematics... ... and because of the way the DX seven is set up, you never get any kind of instantaneous feedback on what you're doing to the sound when you manipulate the algorithms and the values that are going into those algorithms. Like, you can't move a slider and hear the timbre change at the same time. You just have to like change these numbers, and then do all these different steps, hit save, and then you can check your sound. So it's just a really unintuitive process that people didn't really like. So most people just didn't go there, and they just used the presets on the synthesizer. And so that's where we get these super famous sounds like the bass preset in "Danger Zone" or the electric piano preset in "What's Love Got to Do With It".

Will Robin 16:36
Interesting... So it's cheap, so everybody wants to use it, but then it's also too complex, so everyone just defaults to the pre programmed sounds.

Megan Lavengood 17:25
Yes.

Will Robin 17:25
And the most famous one, I guess, is this ... what is it, E. piano 1? So what is E. piano 1?

Megan Lavengood 17:31
Yeah, it's short for electric piano. And it's meant to evoke, I guess, kind of like a Fender Rhodes-ish type electric piano sound. It really doesn't sound that much like a Fender Rhodes, but it's a good reference point, I guess for what an electric piano is. So I think that's how it got associated with the Rhodes even though the timbres are kind of different.

Will Robin 17:55
And how does the ... what is the sound? I mean, you said the timbres are different, but... in this article, you talk a lot about the language that's used to describe 80s music, and the language that's also specifically used to describe the E. piano 1 -- What is that kind of language centered around?

Megan Lavengood 18:11
Right. So with digital synthesis being kind of a new thing for the Yamaha DX7, people really had a lot of strong reactions to the way that it sounded. And the way that they characterized the sound was as it being kind of bright and harsh compared to other kinds of instruments. So compared to analog synthesizers, compared to electric keyboards, like the clavinet, or the electric piano, yeah, so people would describe the latter group, the analog, the electric piano, as having kind of a warm timbre, and a lot of critique about the DX7 would be the fact that it doesn't seem to be able to produce a really warm sound. And I just ... when I was, when I was researching for my dissertation, I would go to the New York Public Library and just check out all of these stacks of 1980s Keyboard magazines, and just kind of flip through them to try to get a sense ... to try to like get myself into that time period, and the way

people were talking about it. And this theme just came up so much ... like, anytime they were interviewing a musician, asking them about the DX7, the musician would say, Yeah, they would often say like, Yeah, I love the DX7. But the one thing that I just can't get out of it is a nice warm sound, or, like, a good string sound, with a lot of like depth and warmth. They would say it's great at bell sounds at plucked sounds, which sound good when they're nice and bright and sharp, but they would just really be missing the warmth. And so I just, I was amazed at all this consistency in this language. And yeah, so I think that part of the 80s sound in general is also this affiliation with the sound lacking warmth. And so I guess what I noticed was -- not only do people talk about the DX7 that way in the 80s, but also nowadays, retrospectively, people talk about the 80s as a whole, as lacking a kind of warmth. And so to me, it's not a far leap to propose that the dominance of the DX7 directly contributes to this sense of the 80s having a very light crisp, clean, sound

Will Robin 20:30
Interesting. And so one way that you deal with analyzing timbre is to, I guess, analyze the discourse around timbre, like to reveal kind of like this is not just like one person saying this, but it's this kind of omnipresent language attached to this instrument, or attached to this particular preset on this instrument.

Megan Lavengood 20:51
Right.

Will Robin 20:51
And then the other part is spectrogram analysis.

Megan Lavengood 20:54
Yeah, yeah.

Will Robin 20:55
What is spectrogram analysis?

Megan Lavengood 20:58
Okay, so that ... the spectrogram analysis deals more with the physical acoustics ... sort of the science of timbre. Kind of like the raw data, I guess. So. Yeah, sound waves are what make us hear sound, and it actually is moving particles in the air. And when you have a recorded sound signal, you can break down that sound signal into all the frequencies at which these air wave particles are vibrating. And so you get not only what we call the fundamental pitch, which is sort of what we think of as the pitch of the sound, but you'll also get what's called all the overtones of the sound, which are also technically separate frequencies from the pitch, from the fundamental, but we don't hear them as separate pitches, we hear them as inflections of timbre -- which is kind of an interesting thing, what's kind of hard to understand without actually hearing an example; but basically the sound waves that get kind of excited, the sound waves that that vibrate when you hear a tone, are not just vibrating at the frequency of that tone, but also at all these multiples of that tone. Yeah.

Will Robin 21:08

So what does, why spectrogram analysis as a vehicle for your research, and how does that kind of work in your analysis?

Megan Lavengood 22:25
Yeah, I mentioned earlier that music theorists really like to look at scores when they do analysis. And I think it's because music happens in time. It's this transient thing. And so if you don't, you know ... in some ways, when you're just listening to something in time, you're limited in what you can perceive about it. Like, how you how you can process it as it's going by, and it doesn't like wait for you to think of some brilliant idea. So having the score allows a music theorist to you know, compare two disparate moments side by side and think of things out of time, a little bit better with kind of a visual aid. So I think spectrograms are nice because they provide a similar kind of visual aid.

Will Robin 23:12
So it's like a readout that has all this... I don't even know what you … How would you describe what it looks like?

Megan Lavengood 23:17
Yeah, it's all these parallel horizontal lines, where each horizontal line...

Will Robin 23:22
Looks like a medical chart or something.

Megan Lavengood 23:23
Yeah, Kind of. Yeah. And each horizontal line represents one of those overtones, one of those partials that contribute to the sound. So it's a nice visual aid for talking about timbre. I think it can help you sort of refine your vocabulary, because sometimes timbre can seem like very ineffable. And actually, this is what I thought was so interesting about the term "warmth" was like, what are people actually keying into with timbre when they say that the sound has "warmth". And so maybe looking at the spectrogram with that in mind can sort of help you find something that seems to correlate to the use of that word.

Will Robin 24:03
And so when you take a spectrogram analysis of the DX7 E. piano 1 and one of the Fender Rhodes, there's something different happening?

Megan Lavengood 24:12
Yes, yeah, definitely. Yeah. So I was thinking, what can I look at in the DX7 and in the Rhodes to try to explain why everybody is saying this. And so the reason why this is kind of my research approach is because timbre is not just that physical acoustic representation that you get in the spectrogram, because that's just a computer processing signal. It's very, like black and white. And it doesn't have the same kind of associations that we make in our brains. So it can be a really interesting kind of research question to say, is this thing that people are all saying, what basis does it have in the physical world, and if it doesn't seem to have a clear basis in the physical world, that's kind of interesting too. Because then It means that it's something that's happening socially and culturally, which is also interesting. So that's kind of the premise for a lot of of what I think about when I think about timbre. And yeah, the

other reason why the Fender Rhodes question particularly interested me, IS because the electric piano 1 is compared to the Fender Rhodes a lot because they're both electric piano sounds, but it's a little weird to me to call the electric piano timbre, even of the Rhodes, to call that a warm sound, because it's also... the way the sound is produced is they have these metal tines inside the keyboard that gets struck with a hammer when the keyboard player presses the keys. And then that sound is amplified with a microphone. So it's sort of like a vibraphone sound or like a, like a glockenspiel type, like a bell type of sound...

Will Robin 25:54
Which we don't think of as warm, normally.

Megan Lavengood 25:55
Exactly, exactly. Yeah, like a metallic sound is almost never characterized as being warm, and yet, when they're comparing the Rhodes to the DX7, they're always saying the Rhodes has a warm sound. So I thought this would be a case where it would be hard to find something in the spectrogram data that reflected what people were saying, which was kind of like my point, like, I think that people are calling things warm more because they think of the DX7 as *not* warm rather than that they think of the thing that's not 80s you know, that's, that's made with analog technology, as being warm itself, if that makes sense.

Will Robin 26:10
OK, so the spectrogram analysis did not reveal a significant difference between these two kinds of sounds?

Megan Lavengood 26:14
Well like, I found some... I mean, there's definitely differences in the spectrograms that I'm able to point to and say this is something that's really different between these two instruments. And the biggest one was that when the DX7 sound kind of initiates, it's all pretty clean looking, I don't know how else to put it, maybe it's better to understand it in contrast to the Rhodes sound, the when the Rhodes sound initiates, it's like very noisy at the outset. And I think what that comes from is the fact that, like I said, a hammer is actually striking a metal tine and then a microphone is picking up on it. So I think probably the limitations of the way the microphone works, and also just the kind of untidiness of the physical action, creates a noisy effect that could be correlated with warmth, it's not the kind of thing that maybe we would traditionally say is a spectrogram feature that means that the sound is warm, but it's one really big difference between the two sounds. So maybe that's one of the things. The other component then is that the DX7 sound has just a couple of high overtones that sound really, really clearly compared to the Rhodes, which tends to have less of those high pitch overtones, which is something that sometimes correlates to brightness and thus to warmth. So something that's not as active in the higher overtone range can sound warmer. So there's these two kinds of things. But overall the sounds were like fairly similar. And if I took away those things, they sounded extremely similar, I think. And so I was like not super convinced that there is a humongous difference between the two sounds. And instead, what I think is probably a better explanation for why they think that Rhodes is warm, is because of the physical action. As a keyboardist you can actually feel how the sound is being produced when you play the keyboard.

Will Robin 28:46
I see - interesting.

Megan Lavengood 28:47
Yeah, so I think they feel more connected to the sound, and that's kind of like a positive experience, I would say, you know, coming from a keyboardist perspective myself, I just feels nicer to play an instrument where you're physically producing the sound. And even though the DX7 action is really, really good, it's not as -- it's just not as connected. And I think especially when you think about the fact about warmth is kind of a tactile analogy, it's based in touch, like you touch something to say that it's warm, it's based on physical feeling. So I think it's ... I think it makes sense to say that it's something that relates to the way it feels physically to touch the instrument.

Will Robin 29:31
And that leads to this kind of accumulation of language which builds like this whole myth... I mean, you talk to you have some people in the in the article talking about this, like the DX7 either being like the Savior or like the destroyer of pop music. So you see all of that kind of traces back to, not actually the sound, but the physical sensation in a way?

Megan Lavengood 29:51
Like I think the sound is part of it, and that's why I include the spectrogram discussion, but I also feel like ... I feel like people's strong reactions to it are kind of culturally based. There was just like a lot of anxiety in the 80s about ... well, I guess this is kind of a perennial... like a tale as old as time. technology's gonna ruin... technology's gonna ruin our jobs as musicians. I mean, it starts with records, right and, and recorded sound period. And today it's probably, like, samplers, auto tune is a big one. Yeah, so it's always something different, and every decade, you know, what technology is gonna ruin music. And so in the 80s a lot of it was synthesizers. So it's easy, I think for people to point to synthesizers and kind of demonize them and say, this is why this sounds bad. And so I guess what I'm implying, and haven't yet articulated, is that I think sometimes people just describe stuff they like, sounds they like, as warm sounds, that's kind of like my pet theory. Yeah. There aren't many people who like ... say they like cold music. Right, exactly, exactly. Like I think, you know, being warm is a nice feeling. And so ...

Will Robin 31:12
But people are also attached to that 80s music and that's interesting too.

Megan Lavengood 31:16
For sure, yeah, yeah. And so I kind of used to be more interested in pursuing that theory as a line of research. But I found that even in the handful of years that have gone by, from when I started this project to now... like I started it in 2015, and it's 2019 now, and even in that short time, I feel like people have really started to appreciate the 80s sound and the digital sound a lot more. And I don't exactly know why that is, but...

Will Robin 31:48

So you take some of these kind of ideas that I guess you developed in your dissertation, and have started to apply these ideas about sound and kind of sonic warmness and coldness to actual Sonic the Hedgehog. I should write down this pun. I don't know, I can't remember if you use the pun, but... so you have this really fascinating essay, which I, as a child of the 90s, I enjoyed reading about Sonic the Hedgehog 3 for Sega Genesis. How did you start working on kind of sound and music in video games? Was that part of your dissertation?

Megan Lavengood 32:25
No, this is kind of like, this was kind of like the first project that I did that was gonna go beyond that dissertation. I think somebody kind of mentioned to me offhandedly that the Sega Genesis uses a sound chip that basically repurposes the technology of the DX7. And I was like, Oh, that's very interesting. And I started kind of googling about it. And there's a huge community for video game music on the internet. It's like really quite astounding how devoted people are to video game music and all the things that they've done to make It accessible. So I, for my methodology, it's really important to be able to kind of isolate the DX7 sound from the other things going on in the music because it's just ... the spectrogram is a bit easier to read when you don't have percussion, really; percussion kind of messes everything up. And I won't get into why, because I don't think it's super interesting; but -- the Sega Genesis and a bunch of music from it can be emulated on a computer. And like people have gotten the data off of the actual game cartridges, like all the signals that fire in the computer, that tell the computer to play this or that thing. And then they've emulated the sound chip on the computer so that you have like the Sega Genesis equivalent of the MIDI signals that you can manipulate and...

Will Robin 33:55
So you can make any music in Sega Genesis style.

Megan Lavengood 33:58
Yeah, exactly. And so I can download these files of the Sonic 3 soundtrack, and be able to manipulate them kind of any way that I need to. So I can single out each channel of the soundtrack. So I can get just one line at a time, or I can have whatever particular mixture of channels I want, and so being able to have that much control over the sound signals that I'm using is really great for research purposes. So I actually never owned a Sega Genesis as a kid.

Will Robin 34:29
I did not either - my parents didn't want me to have video games, though I did play a decent amount of Sonic. I actually own a Sega Genesis now. [Laughing]

Megan Lavengood 34:35
[Laughing] Yeah, we were just a Nintendo household, so I just didn't have a Sega, but... so I actually don't have, like, as much of a visceral love of Sonic as some other people do.

Will Robin 34:48
I never understood Sonic's appeal over Mario, but that's ... I don't want to get into that.

Megan Lavengood 34:53

Now that I've like tried to play it. It's really hard for me, like...

Will Robin 34:57
It's hard period, and it's not... just I don't know, like, there's like five minutes of any Sonic where you're running really fast. And it's fun. And then the rest of it is like punishingly annoying.

Megan Lavengood 35:07
Yeah. It's really frustrating.

Will Robin 35:09
Anyway. Back... But so, I mean, I guess part of the reason why the sound of Sonic resembles the sound of all this 80s pop is the technology, the Genesis, but there are also these other connections between Sonic 3 specifically and hedgehog. Sorry, not hedgehog, and 80s pop. Can you talk a little bit about how that ... and the Michael Jackson thing?

Megan Lavengood 35:32
Oh my god. Yeah. So, um, it ends up not being terribly relevant to the paper, but it's just such a pervasive and popular kind of rumor that I feel like, it needs to be acknowledged. It's like the elephant in the room. So there's this like whole conspiracy theory that Michael Jackson is the composer of a lot of the music on Sonic 3. And people have found like a lot of evidence to support this. Just... there will be basically like music theory... music analysis videos that you can find on YouTube where they're like, this motive is the same as this motive in Michael Jackson. Yeah, there's like some evidence for sure that Michael Jackson was at least courted to be involved with the Sonic 3 soundtrack. But Sega says that Michael Jackson was not involved, and like he's not credited, and so like to this day, Sega says that Michael Jackson was not involved in Sonic ...

Will Robin 36:26
But there are like "truthers" who believe ...

Megan Lavengood 36:29
Yeah, exactly, yeah. And some of the people that did work on the soundtrack have kind of said, Yeah, Michael Jackson was involved with the soundtrack. So that's kind of why it remains in the realm of conspiracy theory, because Sega will not confirm it. I don't know, maybe someday they will. But I think like as recently as 2016, they've said nope, no Michael Jackson involvement. And so then that leads people to wonder why isn't Michael Jackson credited? And there's kind of two competing theories on that; one is a little bit more favorable to Michael Jackson and one isn't. So the one that isn't favorable to Michael Jackson says, Sega does not want to be affiliated with Michael Jackson, because he's a predator. And the other one says Michael Jackson was ultimately disappointed with the sound capabilities of the Sega Genesis. And so Michael Jackson didn't want his name affiliated with the soundtrack because he was disappointed in the results. So all of this is kind of conjecture, but people love to write about it.

Will Robin 37:27

So I mean, regardless of Michael Jackson's affiliation, what are the resemblances between the Sonic 3 soundtrack and like 80s New Wave music, other 80s pop music?

Megan Lavengood 37:39
Yeah, it uses a lot of styles of music. And so like, one point I bring up is that Michael Jackson himself uses a lot of different styles in his music. So that's maybe one kinda connection...

Will Robin 37:49
You talk about him being polystylistic.

Megan Lavengood 37:50
Right, right. And in addition, there's just a lot of different types of 80s genres that seem to be being evoked in the soundtrack. There's like some metal stuff. And there's some new wave stuff. But there's also like various, kind of, for lack of a better term, kind of world music, like regional styles. Like a lot of Caribbean music. There's like a Trinidadian music, and things like that. So...

Will Robin 38:19
One of the levels you talk about is this ice cap zone level. Can you talk a little bit about the music for that and how it kind of relates to the DX 7?

Megan Lavengood 38:26
Yeah. The level ice cap zone is a great example of New Wave music in the sonic soundtrack. And so a couple musical features that sort of to me scream New Wave are the really rapid bass line, so those really kind of rapid fire bass lines became popular in the 80s because they were able to be played by synthesizers and with sequencers, arpeggiators, stuff like that. So a really quick moving bass line would be really hard to do if you're an actual bass guitarist, but these other technologies make it possible. So that was really popular in New Wave music. And in addition, there's kind of like a four on the floor drum beat. So that kind of comes from disco, which grew into New Wave and of course dominance of kind of synthesizer timbres, and then this is kind of where the complication comes in, because of course, all the sounds on all Sega Genesis music are synthesized. They're all made with this like sound chip. So what does it mean to say that these sounds, like, sound like synthesizer sounds? I found out that icecap zone is actually pretty much a recasting of an actual New Wave song from one of the musicians that worked on the soundtrack. His name is Brad Buxer, and he had a band that was not super famous called The Jetzons with a Z. And I can't remember the name of the song, but they have a song that is pretty much the same as ice cap zone, and in that original song, they are using synthesizers for a lot of these parts. So to me, it's ... that kind of bolsters the idea that these particular synthesized timbres are meant to resemble synthesized timbres rather than imitations of acoustic instruments.

Will Robin 40:16
And part of this is also, I think you say, like, Sega wants Sonic to be a kind of, "cool" character, unlike say Mario. So that's, like wanting to make the music sound like contemporary pop music versus something you know, more timeless or what could sound like classical music, like Zelda or something like that.

Megan Lavengood 40:34
Yeah, a lot of the music is sort of like ... has an edgy sort of vibe to it. And that's very much the aesthetic that Sega was going for in their marketing with Sonic. So with Nintendo already dominating the home video game market, Sega was trying to distinguish itself from Nintendo explicitly, and so yeah, they were trying to go for this -- Sonic is cool and edgy and, like, and modern and hip. And so much better than, you know, a chubby Italian plumber. [Laughter]

Will Robin 41:05
How has working with video game sounds kind of changed or enhanced your understanding of timbre?

Megan Lavengood 41:14
Yeah, I think it's nice because you really have to consider the way that humans interact with the sound because it's part of this whole interactive, immersive environment of video game environment. It's all about like what you can do inside the person's mind. Whereas, I don't know, maybe with other types of music, it's more possible to think of it as music in isolation, you know, as kind of a pure thing, which is also you know, constructed...

Will Robin 41:46
Because video game soundtracks are directly ... they're designed for this kind of specific player experience.

Megan Lavengood 41:52
Yeah, yeah. Like I think a lot of times people think of music as totally detached from its context, especially like music theorists tend to do that. But in a multimedia kind of thing, it's pretty irresponsible to discard the other media that's part of the experience, like video game music is attached to a video game. So you have to consider that context. And so that's something that I really like about that.

Will Robin 42:17
All right. Well, those are all my questions. Thanks so much. This is really wonderful.

[Music]

Will Robin 42:29
I'm very grateful to Megan Lavengood, Assistant Professor of Music Theory at George Mason University for that fantastic discussion. If you enjoyed it, I encourage you to go on eBay and buy a Sega Genesis. I hauled mine up from the basement a few weeks ago, and booted up Sonic and discovered once again that after about five minutes of playing Sonic, I get very bored very quickly. You can also visit SoundExpertise.org for links to everything we're talking about today, including Megan's 2019 article on the Yamaha DX7 in the Journal of Popular Music Studies. As always, you can follow me on twitter @seatedovation and the work of my amazing producer D Edward Davis on Soundcloud @warmsilence. Please subscribe and tell everyone you know that Sound Expertise is your favorite podcast, even if it's not. Next week we'll have a super duper extra special guest The New Yorker music critic Alex Ross talking about all things Wagner and all things Wagnerism. And finally, if you disagree with my Top Gun take well that's what Twitter is for. See you next week.