

SAIT Podcast: Harmonizing Life: The Unheard World of Acoustic Science Episode 12

[00:00:00] ANNCR: This is a bonus episode of the Best Careers you Never Knew existed. Podcast.

[00:00:08] LORA: Hi, I am Lora. I'm the Director of Product and Learner success in the continuing education and professional studies department at SAIT.

[00:00:15] Zach: And I'm Zach the founder of Citi Careers and Technology and Innovation.

[00:00:20] LORA: Welcome to the best Careers you never knew existed in this episode, we're thrilled to have Dan Clayton with us to delve into the world of acoustics. Dan, welcome to the podcast. Would you please introduce yourself and share a fun fact with us.

[00:00:34] Dan: Hi, I'm Dan Clayton. I work in the field of acoustics and vibration. Noise gets banded in there as well, but they're quite similar. And I moved from the UK just under six years ago to Calgary, and I've worked in acoustics for the past 15 or so years across the globe.

[00:00:53] Fun fact about myself. I am a failed musician. That's the joke in the industry is that often acoustics people are failed musicians. I'm not, I didn't try to be a musician, but it's like my first passion to get into acoustics was music. And that's the inside joke that people are failed musicians and they come into this as a way to make money that isn't music. I guess that's a fun fact. Anyway,

[00:01:17] LORA: what instrument did you play?

[00:01:19] Dan: Yeah, I played a few from being a young kid. It started with piano keyboards and then played guitar mostly and sing a little bit as well. So, I played guitar since I was about 13 to past 20 odd years or something.

[00:01:32] But it's been nice to have that music background as well, even though it was a joke I started with it's nice to have the angle and the listening ability around music 'cause you're applying those skills and that listening ability to actually solve technical problems as well. Using your ears to detect certain pitches and frequencies and things.

[00:01:48] So it's puts you in good stead in the career when you don't think about that until you actually get further in the line of the career.

[00:01:54] Zach: Can we start for our listeners with like maybe something a little bit more

basic? What is the definition of acoustics? What's the definition of noise? What's the definition of vibration?

[00:02:05] Is that what you said? Like how are these things similar? How are they different? How do you define them as a professional?

[00:02:10] Dan: Yeah, sure. They all kind of slot into a similar world. I'm not someone that can reel off definitions in terms of what the Oxford Dictionary defines things as. But acoustics is generally the field that surrounds all of the things that you mentioned.

[00:02:27] So acoustics is the kind of study, the applied physics angle of sound. So, it's looking at waves from that kind of angle. And then vibration is kind of part of that focus where it's vibration is more before it becomes audible in terms of you can hear it, so vibrations more the ground shaking and it's more things moving, pulsing back and forth in terms of a motion of particles etc from a more of a mechanical side of things..

[00:02:51] So, you'd more associate vibration with say a washing machine going and the floor shakes, that's vibration you don't hear that, you more feel it with your, as a perception from a person. So often vibration then becomes sound because it re-radiates from say, a speaker, is it something that vibrates and then that air then moves and then goes to your ear to then create the sound and that's how we perceive it.

[00:03:16] So, sound is the kind of transfer through a medium such as air, water, etc. It's before it gets to our ears. And then noise is a little bit of a misconception thing where noise is technically unwanted sound, so it's sound that someone doesn't want. You might hear it in terms of audio from like a noise in a signal that you might not want.

[00:03:37] Say, when we are connecting today, we could hear background noises. It's a sound that you don't want, so often people interchangeably use sound and noise in the industry or outside, and so they might describe noise, but actually it's something that isn't wanted. So not all sound is noise, for example.

[00:03:51] So that's how you separate them all. But they're all very closely linked together. In the field.

[00:03:57] Zach: So, it sounds like there's quite a bit of like science that you are applying in your workplace.

[00:04:01] Dan: Yeah, for sure. How I got into the field was I did a Bachelor of science degree in the UK in acoustics itself, but that was an applied physics undergraduate course, and that isn't as much offered here in Canada or North America.

[00:04:16] However, a lot of that degree was mechanical mathematics, physics principles, and applied physics. Then also delving into either electronic principles for, when you talk about speaker design or any, anything to do with that, you can simulate that in electrical

kind of equations. Mathematics is a very big part of, and physical principles, 'cause we're dealing with waves at the end of the day.

[00:04:37] So a lot of things that apply to wave theory that's used in acoustics and physical principles they all overlap. So, it's just a niche element of kind of a physics and mathematical science basically.

[00:04:50] Zach: So, in your work what problems are you trying to solve or what are the commercial aspects or the type of projects that you're working on?

[00:04:58] It depends across my career. So far, I've worked on a variety of them and acoustics, the beauty of the field is that it's not one thing, the same thing every day. Acoustics touches a lot of things in everyday life, as well as design, engineering, whatever you want, you can go from my job can take me even within one day.

[00:05:17] Dan: I can be working on the design of the inside of a residential building or an office or a performance space, or hospital, school, whatever it might be to the other side could be designing noise mitigation for a wind farm or an oil and gas plant or some mitigation process for an aeroplane flying in or aircraft arriving at an airport or some kind of exploratory mining activity.

[00:05:42] So generally in the consulting side of acoustics, it's, we're trying to create that balance between developing a, say, a new project or operation or something that's going to make a sound or a vibration emission, to then see how that is going to impact or be able to operate and not cause a problem, ideally next to either human receptors or ecological receptors, and just try and make sure that the impacts are minimized.

[00:06:09] We would treat something like it's very similar to say, air quality or odor, or light emissions or pollution, acoustics and noise, especially unwanted sound is related to as a pollutant in the World Health Organization. So, it's deemed as one of the key environmental factors that can actually cause problems with health, increased risk of stroke or heart disease, or it's triggered from mainly annoyance related factors.

[00:06:31] Our job is mainly to try and make, whether it's a, an internal space or someone's house that they're living in near to something that might make a noise, whether it's a road, a railway, an airport, an industrial process, whatever it might be to make that so people can live adjacent to those things, and that it's mitigated in control.

[00:06:50] So we would make initially an assessment of what that noise might be. Then assess it against criteria that's developed off subjectivity thresholds from years of research, of testing people, listening to certain levels of sound and determining what causes a problem, what people can sleep in, what they are disturbed by.

[00:07:09] It's very complicated in that sense. And what makes the job quite interesting is that you're not just comparing a level to criteria necessarily. 'cause you could play the

same type of sound to two different people and they respond in completely different ways to that stimulus. So, it makes that kind of industry a little bit interesting 'cause you're not just saying, this meets this level, it's gonna be okay.

[00:07:30] You might end getting complaints from someone and then you have to go and investigate it and do something about it. But in a sense, what we're trying to do is protect the public is the way we go about the job is really just make sure that things work as harmoniously as possible.

[00:07:44] Zach: I'm just like pretty fascinated right now. When you first think about acoustics, you think about the art and the music, but the scientific part of it, the business part of it, and then the human psychology part of it. Is there a lot of like managing and understanding stakeholders?

[00:08:00] Dan: Completely, especially, it's becoming more and more of a thing and especially more that say in Indigenous methods and ways of, sorry, them telling their ways that they've managed and effects on wildlife in particular, and how their life is affected by animals moving where they used to be because of disturbance from noise or vibration or whatever it might be.

[00:08:21] Stakeholders are important to a project 'cause they make the developers and municipalities and government accountable to make sure things are designed appropriately. However, sometimes the extra tricky part of that is that in some areas of the world Canada being a little bit like that in certain provinces where there isn't a lot of rules and regulations around this stuff, especially in BC, Alberta has more than BC, but we're definitely seeing a bit more of a trend as Canada becomes more populated where people are moving into areas which are seen as being, whatever you wanna call it, pristine or natural areas where they're escaping metropolis, like Toronto or whatever. And then coming to live on pristine areas and going, hang on, I can hear this, or I'm disturbed by that. And so, it's interesting how you get these people that have been conditioned in certain ways to live in noisy areas, like in a Toronto or Calgary, whatever.

[00:09:14] And then they move to a more remote rural area and then expect peace and quiet. And it might not necessarily be the case. So, you get all these different types of stakeholders, you get people that are at home all the time, or Covid has flipped to where people work from home or so often these criteria and stuff are designed for people that in the daytime are normally a relaxed level because people aren't as sensitive to noise in the daytime.

[00:09:35] And then when it gets to nighttime, the criteria drops from a sound level perspective because you want the people to be able to sleep. And so, we're more sensitive to that sort of stuff at night. So, as we flip that potentially with more shift workers and stuff, it's getting a bit. It's all changing. And as people move closer to these things and things densify, you run out of space for people to build these things or build houses or all that sort of thing.

[00:09:58] So you get different types of stakeholders no matter what you're looking at. And you can put the same project in a different area. And I've had a completely different reaction to it from stakeholders, and I know that can translate to other disciplines, but I feel that noise is quite a contentious one, especially around renewables, where you have wind developments where noise is used as a little bit of escape in my experience, where mostly people are probably bothered about how the high house price might be affected or the visual aspects of it, but noise is often pushed around as, oh, people are gonna die and be injured and be deaf from these things.

[00:10:34] And it's not that case, but people will get annoyed if these things aren't designed appropriately. So, I find that the consultation piece is very interesting at the moment because it's changing quite quickly with people becoming more empowered and protests happening, and I think that people want to make sure that they are still having this kind of good quality of life, especially when you get people that move into areas that they don't fully understand the acoustic environment that they're moving into.

[00:10:59] Because when you're buying a property or something, you don't necessarily go and check this stuff out before you buy things. You just think, oh, is it near schools? Is it in an affluent area? Whatever. It's, is it a nice place to live? You don't necessarily go and check through the whole year. What the noise climate's like through.

[00:11:14] And so you move in and then you go, oh god, what's that hum that I can hear at night? And it's interesting to be called up by residents who are like, can I do anything about it? And it's not really, this isn't regulated, you can complain. But it's a very interesting time because when I've been in other jurisdictions in the world, especially the UK 15, 20 years ago, where it was similar to where it is in some of these countries without regulations.

[00:11:36] Definitely people starting to trigger and complain and pick up about these problems starts to lead to policy change and more of an extensive consultation process. So, it's quite an interesting time in the industry to see how that's gonna pan out,

[00:11:50] LORA: So how does one go from a aspiring musician to a career in acoustics?

[00:11:56] Dan: It depends, I guess when I got into it, and I've got a YouTube channel that I have that talks exactly about this story of how I got into it, but I got into it through a careers advisor, so I was interested in math, mathematics, physics, and music, and described this to my careers advisor and they were like, oh, this is course in acoustics.

[00:12:13] So I found out about it quite early on in my career, this was like when I was like 15 and designed the rest of my education to go play in that world. But I know that a lot of people don't have that route. That's quite an uncommon route to take. I'd say the most traditional way of doing it is getting either into it by accident through working in a company or maybe in a situation where you're already doing something, that you may be

part of an investigation for a complaint around noise. I know that some of my colleagues have worked for the local authorities or municipalities before where they've been doing various different elements of management for municipalities around impacts to people from, whether it's air quality or whatever it's, but they learn about noise problems and complaints through that process.

[00:12:57] But I think I'm seeing more and more where people are doing maybe more of a mechanical engineering background or maybe an architectural design background, and then starting to just get experience in companies that do that or read good books or publications about it and just start to get in there.

[00:13:15] It's a little bit of a mythical subject because it uses decibels, which you may have heard of, which is a logarithmic scale for rating relative sound pressure levels that a microphone receives. So, it's a little bit weird where you've got three decibels is like a doubling of sound, essentially. So, it's interesting.

[00:13:34] So it's not like twice as much. You do assume that like doubling the sound from say, like 50 decibels to a hundred decibels is doubling, but that's a way louder in like a perceived volume. There's no kind of quick or typical route to it. We try and get co-op students in to, in our companies that, that I've worked in before and that's a good way of getting people in but tends to be that they'll just start doing bits and pieces of it in a firm and then move across from a mechanical background or maybe a electrical engineering background tends to be the way people mostly get into it, or physics for example. But it's a very practical position that you take in consulting, especially where you are using a lot of kind of rule of thumb.

[00:14:16] Because there's calculations and things that go behind it. But there's a lot of nuances around things like I described earlier, that actually having good experience and. Situational kind of examples to give, to take a good judgment call on things. We try and practically train people in the companies that I've worked for, and that's how people get into it.

[00:14:34] So I've had people work to, don't play a musical instrument with me, and I've had musicians work with me. I've had people that wanted to go into audio production that were intrigued about how to design a recording studio or what things sound like I, why? Why do I feel this way over a certain sound? So, it brings everyone together and that's the beauty of the industry is that you've got people like me that studied it formally, and then you've got others that have come from it from more of a physics or an engineering background. So, you've got people looking at all these problems in different ways and scenarios that makes it quite exciting from within a company or a team that you can draw on different experience.

[00:15:09] So there's no standard way of doing it, which is good and bad.

[00:15:14] LORA: So, I'm curious to hear a little bit more about your story. How did you

start out in the UK and this sort of field, and then what brought you to Alberta?

[00:15:21] Dan: I started in acoustics, did my degree, and then it was the 2008 2009 global crash. So, I did a co-op kind of placement year, they called it there.

[00:15:32] So I left university with the years of experience working in acoustics consulting. So, I did a mix of all sorts of acoustics consulting in that years experience. And then when I left university, I got a job in a computer game store for a little bit. 'cause there was no jobs at the time. And then decided to work for myself and with another colleague.

[00:15:52] We started a little small business together and did that for about 18 months. And then the job market kind of picked up and, 'cause I didn't wanna leave my CV kind of dead with nothing. So, we made a bit of money and got experience under our belt and then went a separate ways and I joined a bigger, more multidisciplinary construction firm where I worked on hospitals, schools, new road schemes, oil and gas infrastructure. This was all in the UK for a few years, and then switched over to more of a bigger, as they call EPC firm, which is these kind of construction firms that do the design element as well. So, I worked for that in the uk and that was a big CV accelerator.

[00:16:30] So I worked on ministry, like defense projects. I worked on all the gas offshore platforms I worked on new airport schemes in the UK. I worked on residential development railways, high speed two railway. I worked on that one for a bit. And basically, it was all sorts of things to do with acoustics and sound and, but it was always a mix for me.

[00:16:52] I didn't just like focusing on just doing one type, we tend to split them up a little bit into environmental and more architectural design, or even underwater acoustics, which is a relatively new field. So, I was always a bit of a jack of all trades wanting to just keep my hand in everything, and that was just the way my brain always operated.

[00:17:09] So I enjoyed to just dip in and out of different things. So, I always tried to keep my experience varied rather than niching down too much in this particular. Specific area of acoustics 'cause acoustics is specialist enough. Never mind going into that kind of niche area. I was exposed to a lot of stuff at that company.

[00:17:26] And then my partner and I, we had been to Canada since about 2012. She had about the year before that had a master's kind of field trip opportunity to come to Canada and Alberta. And BC to explore. She did more of a conservation biology, so she was coming over doing cool field trips. So, I feel the the university lecturers may have made up the reason just come on a trip to Canada personally..

[00:17:46] But she got to come and do that. And then she was like, wow, Canada's amazing. You'll really enjoy it. And so, we came maybe every couple of years after that point just to come on vacation. And we just enjoyed the kind of opportunity here to

enjoy the outdoors and the nature and the space and the vastness of it.

[00:18:05] And just the people were nice, and the culture was very similar to where we were from. And we'd explored Europe quite a lot and just thought, why not move, and work up the opportunity to move and join the current company I'm with to Calgary or Vancouver? And I picked Calgary 'cause I felt it was a more cost-effective living opportunity, basically than Vancouver and have enjoyed it ever since I moved here. So that's my kind of journey in a nutshell.

[00:18:28] LORA: And now you are the president of Alberta, Acoustics Noise, Vibration Society. Can you tell us a little bit about that?

[00:18:35] Dan: Yeah, sure. I got that appointment last year, the Alberta Acoustics Noise, Vibration Society is AANVS for short, which rolls off the tongue. That has been in place for a, a number of years and has changed names a little bit.

[00:18:49] So that is basically just a collection of practitioners generally historically in the province. That has a kind of a practical angle to acoustics. There is the Canadian Acoustics Association as well, the CAA, and they are a little bit more theoretically based and so they talk more about research and that sort of thing, whereas the, this society was set up more to talk about getting people in industry, helping bring the community together to make.

[00:19:18] I have a conference every so often as well to just to move things forward from a more practical sense going forward. We're trying to switch things up a little bit around that, just to try and influence regulations a little bit more and try and be a little bit more involved to set good practice. We've been working with the city of Calgary to try and help them rewrite their noise by law.

[00:19:39] To make that make more sense, help them implement a noise policy. So, they can make decisions and set things a bit more appropriately with the criteria. 'cause it's a little bit old fashioned and to help them leap forward in things. So, we're trying to do that with other areas as well. We might even try and steer to, we're trying to get input from our members to push for more of a provincial guideline for regulation of acoustics as well, which doesn't exist in all areas it's just certain industries that it applies to.

[00:20:03] So we're trying to do that as well as trying to get people more into the industry and help them understand this as a career option, which is how we got connected. Open that up a little bit more. So, we maybe include more audio practitioners in there. We try and meet once every couple of months in either Calgary or Edmonton to do networking and social events to connect, not just to practitioners together, but also try and get other people in the industry and just talking to us and find out more about acoustics.

[00:20:33] Another thing we're trying to do is try and educate the public around what's

going on in acoustics. What are the potential risks associated with acoustics and why they should probably give it more attention and understand it a little bit more, so they feel a bit more empowered. So, we're trying to look into that this year to try and educate and spread awareness around how people can understand that a little bit more, so it's not as scary.

[00:20:56] Zach: Can you talk a little bit more about how the industry has changed since you've joined it and what's exciting about the future?

[00:21:02] Dan: It's very exciting. I'll get into that in a second. But when I got into it, it was still that, and it's probably the same for a few industries, it's that leaving behind a little bit of that world where it was less computational.

[00:21:16] I guess when I got into it, we were still doing hand calculations, getting, drawing things out on diagrams, and drawing lines and doing predictions manually through spreadsheets and things. So, one of the big changes has happened, a couple of them. One of them is we switch more to the modeling environment now where we compute models, but also the equipment that we've used to measure sound levels and vibration levels has changed significantly.

[00:21:40] It was very much more manual. You would sit and watch this kind of like studio. Me in like a recording studio. That was what sound level meters used to be like. So instead of getting a reading on say a voltmeter or a multimeter where it's like you read resistance and it tells you what it is in sound, it was like you'd have to look at the needle kind of moving and kind of eye what the level was supposed to be.

[00:22:02] And at university I was still using that kind of sound level meter. And then over this past 10, 15 years, we've now turned into units that we can deploy remotely for months on end battery powered that we connect through the internet to check on them and listen to them, and they will give us accurate readings down to the 10 milliseconds of what our sound level's been like over various different parameters and things.

[00:22:24] So the change in equipment and technology has been quite flabbergasting, to be honest, through that process and over this time. Yeah, that's the main big change to date. Then going forward, I think how AI kind of shapes things and more, that kind of computational angle of it will keep going further and further.

[00:22:44] And I think we'll see more of that playing into more of our day-to-day role of how we process data more quickly. And now we can do more automated assessments of things where you would normally have to audibly listen to something. We might get AI to learn what certain things sound like and start to say, look, that little blip in the sound spectrum or time history will you'll say, oh, that's a bird, or that's a reverse, the siren, or whatever it might be. So, we're seeing some of that stuff start to creep in, and I think one of the biggest changes that will start to happen is as we move more to like people getting closer to each other and more of a requirement for this to be factored in as part of our

everyday life, we'll start to hear words like soundscape heard a little bit more.

[00:23:27] Which essentially soundscape is how something sounds in an environment. I used the word acoustic environment before, but they'll use things like in a city soundscape. It's like when you go stand out on the street in Calgary or whatever, and the things you hear, and it's like how that relates and translates to how, if it's a positive sounding thing or a negative sounding thing.

[00:23:47] As we move more towards sound sources that we can't control as easily, like aircraft for example, there's not a lot we can do. I think they say like in 10 years there's two decibels of attenuation happens in the aviation industry. So, there's not a lot you can do between you and an aircraft to make it quieter.

[00:24:03] It does what it is because it's an elevated source. You can't put it in a building, you can't put a fence in the way. It doesn't really work like that. I've explored around the world more is this idea of soundscape to introduce more positive sound sources that might mask certain sounds. So, you might introduce like a fountain or a set of trees that might rustle in the wind or introduce birds to the area.

[00:24:24] So then it starts to drown out some of that aircraft noise and make it sound a bit more pleasant. So, we're trying to think a bit more cleverly around that. So, I think those are the big changes in the industry that I see coming apart from the whole thing around AI and how Google might take all of our jobs and all that stuff when they start to predict everything for us, I don't see that happening fully.

[00:24:44] I think we'll still flip and switch and still have careers and things, but it's an interesting time because all of it is moving so, so quickly. And trying to keep up with that is exciting as well as, oh my God, what are we gonna do? Kind of thing.

[00:24:56] LORA: And I think even from the perspective of Calgary and just how, even in my area, and yours too, Zach, how much denser it's becoming and there's been a noticeable difference in the amount of sound or noise that's going on in the neighborhood.

[00:25:10] So I can see the trend towards just being, needing to be more conscious of. If someone wants to get into to your field, what would you recommend that they do? Or even if they wanted to explore.

[00:25:21] Dan: Explore. If you're in Alberta for say, I definitely would encourage you to come down to one of AANVS social events where you can actually just talk to practitioners 'cause like I said, everyone's story's different as to how they got into it. I would also encourage people just to call companies that do it, do a Google search on acoustic consultants or noise assessments or whatever it is, and just. Reach out to people either on LinkedIn or just set up a phone call to go meet for a lunch with them.

[00:25:46] We're relatively a friendly bunch in the industry that want to encourage people into it, so we're always happy to answer questions about it. We are trying to get out more, to do more career fair type stuff and start to encourage people and maybe get to do guest lectures and universities and things.

[00:26:00] But I think in terms of people that are suited to this world. I think it's someone that likes to solve problems, likes to have unique challenges, constantly thrown at them. It's not someone that wants to just do a relatively simple job. It's interesting for a reason. 'cause it can be challenging and it's someone that's maybe a little bit more analytically minded, but also creative.

[00:26:24] Especially with all these things that are coming our way with the different technologies and the way things are perceived by different people. You can't just apply like a blanket rule to every situation. So, it's having that open-mindedness and that proactivity to always question everything you're doing and always trying to improve.

[00:26:43] Yeah, but I think it could be anyone. I think I've seen musicians succeed. I've seen more people with a physics background. Ecologists seem to come into this world more often than not. Which is interesting and, but it really depends. I think engineers fit in here quite nicely, especially in Alberta.

[00:27:03] Not to duplicate on what said before, but that's the feel. We're a very open industry to try and encourage people into it. How do most people find out about the, I think most people probably find out through searching for jobs at the moment, or they find out by accident or they know someone in it. I think for sure, but we are starting to see more people understand at least a little bit more about it.

[00:27:25] But co-op systems are helping for sure, but I think it's when there's an educational program available that you're seeing more of that happening in my experience, if there's more push for it, and then also if there's more regulation around it. I think if we've got better noise policy and regulation and bylaws, then it becomes more of a thought process and people understand what it is.

[00:27:47] But it comes back to education. If we can get into schools earlier in time and then make them understand what this is about and how this actually affects everybody all the time, pretty much every second of the day without them even realizing it. In terms of how people find more specifically about the job, it's, there aren't too many companies in Canada that do it.

[00:28:05] I think there's probably 2025 maximum that kind of do it, and a lot of them are smaller firms for sure. That less three or four kinds of people in the organization, I think just reading up about it, you've got the CAA, the Canadian Acoustics Association. They have some reading information on there. The Institute of Acoustics is an organization in the UK, but they have some good literature and information that you can read.

[00:28:28] But yeah, just Google's your friend. Hopefully this podcast helps. And I have podcasts as well that I do specifically on acoustics called Noise Busters, which is, has been fun. Me and my former colleagues set that up just to try and encourage people to know about the roles and the jobs in the industry.

[00:28:44] So what we're doing here is just exploring with people that have been in the field for a long time or that do unique thing just to. Make them realize there's actually a career here. 'cause even when I am been in the job 15 years, I'm still not sure my grandparents really understand what I do for a living.

[00:29:00] They used to think I played acoustic guitar for a living for a long time 'cause it was the word acoustics. Even people that know what I've had as a job for a long time, still don't know. So, every week I still get people that think, oh, I didn't even know that was a job. So, it's cool. It's interesting to be that kind of unique industry that influences so many people's lives, but they still don't know it really happens. It's quite funny.

[00:29:21] Zach: It sounds pretty incredible, the work that you're doing between the AANVS and your podcast and education. We're lucky to have you in Alberta in this industry. So thank you for all that you do.

[00:29:32] Dan: Oh, it's a pleasure. It's fun. So, any, anyone that's shown any help to me is very appreciated, like you are, so it's great.

[00:29:39] LORA: Yeah. And we'll make sure that we put links to the resources, the society, and your podcast.

[00:29:45] Zach: If you could narrow it down to one piece of advice, if someone's listening to this podcast today, they're like, Hey, this sounds really interesting to me. What would you encourage them to do for their next step?

[00:29:55] Dan: I would encourage them to start like reading about the subject or reach out to me like I can send information for people to read. If you're really inquisitive, just start. Get a microphone, start recording stuff. Go out in the field, start just listening more, taking note of what's going on in your surroundings, and start to just think from that perspective rather than being like someone that ignores that stuff start to be a bit more of an observer and a bit more analytical.

[00:30:24] What is going on around you? Listen. Oh, I can hear a train. Or, what's that noise? I can hear an industrial fan. I can hear someone shouting. I can hear distant traffic. And you start to train your ears a little bit more around that. And if you're really wanting to get into it, just like I say, just start reaching out to companies and start just asking them what they're expecting, what they need.

[00:30:44] Different companies are in different positions to hire at these certain times.

Some people want more experienced people. At certain times of the year, or the people want more junior people that have got no experience to train up and help with more of the simpler work that's done. But if you've got that about you and that you might have that kind of background to be a listener, that's generally what the role is.

[00:31:04] We'd still do calculations and stuff, but at the end of the day, you still have to make a judgment based off your mouse about how something sounds or how something's gonna be perceived by someone and kind of put yourself in that position. If you're generally an empathetic person, I think you'll do well in this field because you're putting yourself in other people's shoes and not just thinking, oh, this meets this criteria, it's not gonna be a problem 'cause that isn't the case.

[00:31:27] Yeah. But I'm happy to answer any questions to anyone that's interested. And generally, I find in the industry, anyone is so it's cool. It's been fun to be a part of so far and I'm still here.

[00:31:37] LORA: What would you consider your most interesting project that you've worked on? Because you listed a few off in your litany and I was like, oh, I feel like there's all kinds of stories.

[00:31:46] Dan: There's some, yeah, I've done some stuff. Yeah, for sure. I think the most challenging project I've had is when I've worked more on oil and gas platforms from like a technical standpoint where it's very interesting 'cause even though we've got rigs and platforms and stuff here in Canada, when I was in the North Sea doing it, you basically have a unique situation where you've got not just a chemical plant. Essentially, you've got people living on that chemical plant, like in close proximity to big machines, like big machines. You've got big power generators creating loads of low frequency noise, which travels through buildings like very easily. And so, it's trying to create that balance where you're trying to do like a production line and create a product, chemical product.

[00:32:29] And then you're also trying to make it so people can live, sleep, work, communicate all that sort of stuff on the same place. So, I did a few projects where I was actually, they were expanding some of these oil and gas platforms to introduce additional accommodation modules. So I was, they were putting them nearer to these industrial processes.

[00:32:47] So I was ensuring that those were designed appropriately and then they had to build them out of really rigid, heavy, thick steel, double steel. 'cause there wasn't just the sound aspect of it, it was like the explosive nature of things. If there was a problem. So there was loads of like design criteria that was outside of acoustics that I had to take into account around that.

[00:33:06] And so that was interesting. But also, the element of having to do the helicopter training to fly out there and travel out there, to be out there for a couple weeks or 10 days or whatever it was that I went out there a few times. That was an

interesting element of it. But I think some of the more interesting projects that have pushed me have been around where I've done complaint investigations for sure.

[00:33:26] It's like I say, you're there with someone. It's very intimate and personal where someone is letting you into their house to basically explain when they sleep, why they're woken up. Like you learn a lot about people and why they're annoyed, and often they're very frustrated for a long time because nothing maybe has been done or they've not been heard.

[00:33:47] So I find that element of the job very interesting because it's that kind of human psyche side of it. So, you're trying to understand how different people, and even when you're in one household, in my experience, I've talked to one person that's complaining about something and then say their partner has been it doesn't bother me.

[00:34:03] I don't know what they're on about. So, it's even within a household, it can be very isolating. So, it's, that is a very challenging part of the job because especially when you are trying to detect sounds that aren't there all the time. So, I've had ones where they're intermittent and they come like once a week or once per day and at different times of the day.

[00:34:20] And then, so you're having to be reactive and almost on call and. I end up actually going above and beyond it. You take the result and the outcome personally because you've been so involved and invested in that process that you're actually genuinely wanting to solve this problem for the person, even though you might be working for the company 'cause you're like, oh my god, I've seen how this is, these people are reacting to this and it's my duty to fix it.

[00:34:42] The upsetting things sometimes is that, especially with low frequency sound, is it comes from all sorts of places and it's very hard to track down from a direction. Because of the kind of wavelength of it, and it spreads so far and wide, it's very hard to track down where it's coming from. So, it can be quite a lengthy process that you go through trying to try this, try that, and you end up coming out sometimes with an inconclusive answer to it, and you just need to keep going till you find it.

[00:35:06] Frankly, most of the time I've found the result eventually, but it can take a couple of years to find a solution to a problem sometimes. That's been very interesting to me. I found the human aspect of it very interesting rather than just the technical design side that is important to come to a solution.

[00:35:22] But I find being able to relate to people and understand where they're coming from and understand how you can be there for them and under and be often the only person that understands the problem. It's quite an interesting position to be in. So that's been probably some of the more interesting and challenging parts of my role to date.

[00:35:43] LORA: That's very cool, and I can appreciate if it started affecting people's

sleep or their mental wellbeing, like how emotionally charged of a process that could be. It gets pretty intense.

[00:35:52] Dan: Yeah, it does. And you just feel sorry, especially when it's even worse, when you know the solution and the end.

[00:36:00] User or like the person causing the problem isn't willing to do something or realizes that there's a problem and relatively an easy fix. So, they'll dig in because they don't wanna be seen as causing a problem. That's even worse, and I've still got ongoing processes where that's happening even in Canada, and it's very frustrating to be in that because you feel powerless the answer and because of the bureaucratic process around it, it's, I can't do anything about that right now.

[00:36:26] So it's interesting, especially when there's no regulations to lean on. I think some people think no red tape is a good thing, but it's not. It really isn't. 'cause there's nothing to really, from both side of things, if there was a number to aim or hit that made sense, you could be like, look, we've designed it to this and you are a bit of an exception.

[00:36:44] And because that isn't the case, they often have these bylaws that say they must not cause a disturbance. And it's, wow. That could be anything to anybody. So, it's crazy. It just, it baffles me. That is the wording that's out there. It's interesting 'cause I think people don't really understand how it can affect them.

[00:37:01] I think, I don't know the exact stat, but it's like noise and exposure is like the second worst environmental impact to air quality. The World Health Organization deemed it as, and it's. Ironically, there's like the silent killer. Not because sound kills people, but it's people's reaction to it that causes these stresses and health issues.

[00:37:20] And unlike anything, if we don't get good sleep and it's repetitive, it can destroy lives, relationships, and everything, it's just, it's horrible once you actually experience that, and the more people do, like when you've got people in a company that's more like an environmental protection officer or whatever, they will actually take noise more seriously in the future because they've had to deal with problems.

[00:37:39] So that's where you see change in organizations and people being proactive is because they've had, I don't wanna deal with that problem again with that kind of person or resident. So, I wanna make sure that this is designed appropriately. So, we're seeing more of that definitely with the more that people receive complaints. So it's getting there, but it's a very interesting job to watch and observe and try and provide input too.

[00:37:59] LORA: Thanks again for all the work that you do and sharing your story and just giving us the insights of acoustics and some of the work that you're doing in Alberta. I really appreciate it and found it fascinating.

[00:38:11] Dan: Absolutely. Thank you.

[00:38:14] ANNCR: The Best Careers You Never Knew Existed Podcast, sparked by SAIT and CITI, funded by the government of Alberta. Have a career suggestion or want to appear as a guest? Get in touch SAIT.ca/careerspodcast. Rate and review this podcast and you might find your review on a future episode.

[00:38:36] Please subscribe to the best careers you never knew existed. Wherever fine podcasts are downloaded with Lora Bucsis and Zach Novak. Produced by Terran Anthony Allen and Jenna Smith, executive produced by Laura Bucsis, Voiceover by me. dun dun. Alright, special thanks to SAIT Radio for their support and the use of their studios, and most of all, thank you for listening!