

Things You Can't Live Without

S2 Episode 2 – Jon Lampley on blowing his trumpet, outdoor venues and the ethics of AI in music

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Dr Anna Ploszajski:

Hello and welcome to Things You Can't Live Without, the podcast where I, material scientist Dr. Anna Ploszajski, ask a very special guest to tell us the one thing that they can't live without. As well as that, we interrogate a host of experts to find out how these items are made, where their components come from, and how the future of those items is being planned for.

Joining me on the podcast today is Jon Lampley, trumpet player extraordinaire, and part of the house band on The Late Show with Stephen Colbert. Welcome, Jon.

Jon Lampley:

Hello, hello. Thank you so much for having me.

Anna:

I'm also joined by Shawn Lyndon, Chief Digital Officer at Rio Tinto. Welcome, Shawn.

Shawn Lydon:

Thanks, Anna. Great to be here.

Anna: [00:45]

So, Jon, tell us, what is the one thing that you can't live without?

Jon:

The one thing that I could not live without is my trumpet.

Anna:

There it is. Finally, a thing you can't live without that I can relate to because I am also joined by my trumpet on the podcast.

Jon:

I love it.

Anna:

I am totally with you there. I also couldn't live without mine.

Anna:

Shawn, can you live without trumpets?

Shawn:

I love the sound of trumpets in music generally, but myself, I wouldn't know what to do with one. If

you put it in my lap, there'd be some awful sound. So, I'll leave it to both of you.

Anna:

Brilliant. A world without trumpets would not be a world that we'd want to live in. So in this episode, we're going to be exploring the relationship between analogue and digital, whether that's in music or in mining.

And to kick us off, Jon, would you give us a little fanfare to open the podcast?

Jon: [01:42]

Absolutely. It would be my great honor.

Anna:

Incredible, thank you. So, Jon, you're both a trumpet player and a sousaphone player, love that, as well as being in the Stephen Colbert House Band, as I mentioned, you're also part of the jazz funk group Hunter Tones and have performed worldwide with rock band O.A.R. Where did it all begin for you?

Jon:

So for me, music was something that started at home with my family. I grew up in an Apostolic church where there was gospel music all around, and everybody in my family either sang or played an instrument. And then by the time I was nine or ten, fifth grade, that's when you go to school and the band program starts. And I was like, you know what, the trumpet is really calling to me.

I don't know, I've always been kind of an outgoing personality, and I don't know if it was because it's the loudest one, and that's kind of like me. But I was extremely drawn to it, and I started playing in school band, but also I started playing at church. And so that was the very beginning of my musical journey.

Anna: [02:42]

I love that. Yeah. For me, it was, we had a women trumpet player come into our music lesson and give us a demo and she just inspired me so much. She played jazz and she played classical, and I was like, right. I want to be like you teach me how. Let's dive into your object of the trumpet. If we may, can you describe it for our listeners? What kind of trumpet is it?

Jon:

All right. So this trumpet. is actually a custom-built instrument.

Anna:

Beautiful.

Jon:

Something that is really important to me and kind of how I think of music is like, this horn is an extension of my literal voice, but also my personality. So, as long as I can get to the purest version of my voice out of this instrument, that's all I really care about. And I've always been able to do that on this horn.

Anna: [00:03:30]

That's awesome. Do you know what it's made from?

Jon:

Raw brass is the material that makes up most of the horn. It kind of has a little worn-down look to it, which I really love. Over time, it kind of wears and it doesn't stay so shiny. And I also think that those horns are able to get to a sound that is a little darker when you're going for that, which is something that sometimes I like to be able to get to.

Anna:

And there's something lovely about an instrument changing with you over time. Does a particular performance stand out as being your favorite, a really magical moment that you can tell us about?

Jon: [04:04]

I'll give you two. So, I went to The Ohio State University, which is a school that is known for its football team, and also very notably for the marching band. The nickname is "the best damn band in the land" and something that they're known for is a formation called Script Ohio, where essentially the band writes out Ohio on the field as if a pen is like writing it out in cursive, and at the end of the formation, every time the band would do it, a senior sousaphone player gets to dot the I, and it's this great honour, and it's, you can find videos of it on YouTube, and when I was a little kid, and I saw that, I was like, you know what? I want to do that. I was obsessed with Ohio state football. I shared it with my dad and in 2011, my senior year of college, I actually got to dot the I three times. Something that I will never forget in my entire life.

And the other one that I will give actually happened much more recently. The horn section from the band Hunter Tones has been playing with the band Lake Street Dive, which is kind of an incredible pop soul band. And they asked us to come out and do some tour dates with them. Most notably, we got to play right here in New York at Madison Square Garden. You know, you grow up and you start doing this and you see concerts in very legendary venues. To get to play at that arena here in New York was a very, very surreal moment.

Anna: [05:30]

Yeah, I love that. Shawn, I want to bring you in at this point to play a bit of a guessing game or maybe an educated guessing game. I still want to stick with trumpets, and I still want to stick with materials. But the thing that I love about the trumpet, apart from its versatility and that you can play pretty much any genre on the trumpet, is that it is probably one of the oldest instruments. Shawn, I wondered if you can guess what different materials have been used to make trumpets throughout history?

Shawn:

I'm wondering if it was wood. The reason I think of that is I, you know, growing up in Australia and being here, I think of didgeridoos and those types of things and the incredible sort of culture that the first nations people here of Australia have built.

Anna:

Yeah, that's a really good guess. I think that's Jon, any others? Any other early trumpet materials?

Jon: [06:13]

I mean, maybe some form of clay, but like, not like Play-Doh clay, but like the stuff that they would imagine they're making vases and that kind of thing. Maybe they crafted instruments out of that at one point.

Anna:

You can imagine that would be quite resonant as well.

Jon:

Right, exactly.

Anna:

The conch shell, I was thinking, you know, things from the natural world, like people going down shells and animal horns. I don't know if you've seen pictures of Tutankhamun, ancient Egyptian king. He was buried with some silver trumpets. And they are apparently cursed. That's the whole story about Tutankhamun's trumpets being cursed and the times that they've been blown in recent

history have been just before like terrible tragedies and wars and things. So I don't know if they're allowed to be blown anymore. And then Roman Bronze was the first sort of engineered metal. By that point, people were starting to be able to bend tubes. Bending a tube is actually quite hard to do because it often just folds. So the technology of bending tubes took a while to be developed. But during the Industrial Revolution, when people were starting to engineer metal, we were making steam engines using airtight valves, and some trumpet engineer just thought, ah, that would make a better trumpet. So they took the same technology in steam engines and stuck three of them in a brass pipe. And those are the sorts of trumpets that we play today. But it came out of an engine, which I think is quite cool.

Jon: [07:35]

That is amazing. Something that I feel very fascinated by with our instrument, the trumpet specifically, is how it has developed but also how there is still this human element where it's not one trumpet is the best trumpet and it all kind of depends on what your style is or where your technique came from or what's your preferences of how you play or how you're trying to sound.

Anna:

Yeah. There's definitely a little bit of magic in it.

Jon:

Absolutely.

Anna:

So Shawn, how do you best enjoy your music?

Shawn:

For me, I find music's my happy place and a great escape. I really enjoy everything from live music to recorded. I would say probably the place I'd say I enjoyed the most is in Colorado, Red Rocks, often, and it's an outdoor amphitheater.

Just spectacular sounds, and I don't know, I've found that it doesn't matter what music it is, it has just this otherworldly sound, and the experience of being outdoors, connected to nature, that's my favourite place to go and listen to music.

Jon:

I've been able to play there quite a few times over the past decade, and I will agree with you. I think it's the greatest venue in the world. Anna, you talked about magic. There is a very specific magic to a place like that, that you just can't describe. Yeah, Shawn, that's a really special place.

Anna:

It's so interesting that you mention an amphitheater, which is a kind of analogue type space. Because in this episode, we're talking exactly about that. The idea of analogue versus digital and the differences and similarities. Jon, do you think about that element in your work that analogue to digital switch?

Jon: [09:21]

I think about that often as an artist, as a musician, as a human who does this and cares about it very deeply. I always am aware of what I sound like. This instrument is the definition of analogue. So we're literally talking about the vibration of one's lips against the metal that creates the sound. You know, I put out my first record last year and it's a live album that was recorded in a very small space, and everybody is hearing exactly coming out of all of the instruments, the trumpet included. But then as you said, I'm playing on TV every night and that sound is going into a microphone and sounds very different than what people are hearing in the theatre. What I do have control of is my sound, what I sound like on the instrument. And something that I have worked towards over many, many years is coming up with a distinct sound. Because I think that all of my heroes, both on the

instrument, but also like singers and artists, they have the most distinct sounds. And I think that is a way to kind of really cut through the digitisation of what the sound is when you really have your distinct voice on your instrument.

Anna:

Yeah, that makes a lot of sense. Shawn let's talk about digitisation in your world. Rio is in the process of digitising a lot of its traditionally, analogue processes. Can you first explain maybe what digitisation actually means in your world?

Shawn: [10:48]

Can I just pick up on what Jon was saying? I mean, I think digitisation, as we talk about even music or anything else, it's taking those analogue, those sounds, those vibrations that are actually occurring, you know, in the air, reverberating off objects, and converting those into something that is essentially ones and zeros at the end of the day, but there are a lot of ones and zeros that end up being able to as closely as possible represent that analogue world. And, and imagine Jon playing at Red Rocks. And as you mentioned, like all the sounds and where all those sounds are going and bouncing off rocks and people and audiences, and we're able to now sample those things at a higher sort of quality than we have in the past, a higher density to try and get closer and closer to being able to represent what is the real world. As everyone's seeing, like, with the rise of generative AI and chatbots and your photos now, which you can manipulate and automatically be updated. That sort of ability to take what is previously on film or previously a set of vibrations or photos or video and convert that into ones and zeros so that we can then not only represent it but interpret it through software and other computing programs. That's really what sort of digitization and the digital transformation is about. And it's been a journey we've been on for a long time. I think the one thing that comes up as people think about generative AI and chat bots as being something that creates, it doesn't create, it really is recording. And what Jon does and the artistry of people who create is very critical to continuing for digital to also go ahead. And I think that's just an important point of where its limits are, at least today.

Anna: [12:45]

Thinking about digitization in the context of a company like Rio Tinto, why would a company like that need to digitise?

Shawn:

When in the process of mining that we disturb the environment. But we also go to great lengths to restore the environment and preserve the environment as we go. We were very concerned with making sure that the natural habitat was coming back and the birds, the animals, the fauna that was there that was coming back and growing and was healthy. So in the past, in that situation, we would send people out surveying and they would try to manually cover thousands and thousands of acres and sometimes these are areas that, you know, are the size of a small, medium sized state in the US. And this is just, to do this, you, it's very difficult to cover that much. So now, we, as an example of what we're doing, interestingly tied back to music, we're studying and monitoring the Palm Cockatoo. It's a beautiful bird. It's this black and red bird is really important to the ecosystem, and it's called the Ringo Star of birds because it actually makes its own drums, believe it or not, from branches. We're able to make sure that it's able to nest and rehabilitate. And so, in that case, we're able to use cameras, and we're able to digitise those images. From that digitization, calculate the number of birds, the increase in the population, their nesting habits, whether they are breeding in a healthy way, whether that's increasing, and whether that is rehabilitating in a way that is inline or even in this case better than before.

Rio Tinto operates the largest automated robotic trains in the Southern Hemisphere, it was the first to install it. But we have these robotic trains that are traveling all over the country, you know, over expanse the size of Texas, all automated. How do we make sure that the space that the tracks that they're traveling on are in good condition? Physically getting people out there to do that just does not scale. By digitising the condition of the tracks, the conditions of the trains, simple things like

vibrations. They tell us a lot. They can tell us if the train is about to fail, and we're able to predict failure from that data. Very importantly, we're able to avoid derailments or accidents that may happen. It's just a couple of examples of why Rio Tinto's using digitization to inform the ways that we do things.

Anna: [15:19]

All of that sounds really positive. Jon, do you have examples in your work where digitization has made a positive contribution to your creative practice?

Jon:

I mean, absolutely. I listened to a lot of music that was recorded before it was possible to digitise sounds. They went in the studio. And they set up and they recorded straight to the tape. And there is a beauty in the way that was captured the sound of it, the honesty of literally what you heard on those records is what was played. And that kind of changed the way that you had to play and perform. I hold massive appreciation for that. That being said, as a creator, I am amazed at the idea that I can create full horn sections of 10 to 30 trumpets and balance it all out and make it sound as if you're listening to a full horn section that recorded in a big, big recording studio with this microphone in this room. And I can do it very quickly because of the power of digitization. All of these things have not only become possible, but they become easier and easier to where you hear about an artist like Billie Eilish making one of the biggest songs in the world, mostly in her bedroom. And I think the ability to have an idea, create it and manipulate it so quickly with so little is a really powerful tool for musicians and artists like me. But I will always believe that the best way to create is kind of this middle ground where you're using the power of digitization to facilitate the process, but you're also committed to an honesty in the capture.

Anna: [17:17]

How do you feel about the honesty of artificial intelligence being another tool in that toolbox?

Jon:

Shawn, you said something very powerful earlier. To the effect of, as incredible as it is to be able to say "Hey, ChatGPT, write me a song about dominoes in the style of Taylor Swift meets Stevie Wonder," and it'll spit something out that is kind of that. It is very powerfully and efficiently regurgitating what it has learned. Through what we as humans have actually lived and experienced and I think something that people connect with is the struggle the human struggle and I believe that Artificial Intelligence can be a powerful tool to help us, you know, can I say, "hey can you alphabetise these track listings so I can access it easier?". I think that's really great. But I am wary and pray that we do not go down the path of ChatGPT, "here's the idea that I have, make this sound like Freddie Hubbard meets Louis Armstrong."

Anna: [18:36]

Absolutely. Same question to you, Shawn.

Shawn:

Jon did a really great job of summarising it. I don't really need to add much more. It's blending a lot of different pieces from areas together that has been modelled, analysed, etc. I would say that today for the role for sort of AI and being able to really help us model how things work and to be able to do different simulation scenarios and to improve how things work. I'll share an example on that. In fact, in doing digital, there's two parts to it. And one of the things that happens a lot is that even creating new software, there is a creative element to it. You only have to look at how much the software and digital world keeps evolving. And applying AI in ways it hasn't been is innovative. But innovative to me is really looking at a problem or a need or something that we haven't really solved well. And creatively and typically collaboratively. Thinking about different ways that we could solve that and build something that would do that in a way that is better than we've done before. And that is very different. And that is creative. And that happens a lot in digital, just like AI. But even as Jon mentioned, I think, you know, as an artist, I'd want to make sure that we are

thinking about how we use artist's content.

There is an obligation to ensure that that content is not reused in a way without their consent. So there's a lot of these sort of questions that are very ethical, the ethics of data and AI that are coming up. I think that's probably more of the issue. I think it's fun to think about, oh, AI takes over and it creates all these problems. But really, I think right now, I would say that the thing that concerns me most is that we do AI in an ethical way.

Anna: [20:24]

Looking to the future, Shawn, are there any exciting areas that AI or digitization more generally, is going to really make a big impact? Can you give any examples within the realm of Rio Tinto?

Shawn:

I think one of the most exciting areas is using AI to analyze all of the different steps along the path. When we go to explore a new mineral deposit, we may be going onto lands that are owned by First Nations and Native landholders. How do we do that in the way that is most respectful to them and minimise the impact we are having as humans generally on that land? How do we use lots of data to know more quickly without doing lots of disturbance to the land, whether or not there is something there that would be very useful to extract and mine, but then how do we then plan our mining in a way that we reduce the impact on our environment? Another area that I've had some exposure to, aluminium processing, and it takes a lot of power to produce aluminium.

There's certainly a lot of work being done to move to hydro and other renewable energy, whether it be wind and power, but to be able to efficiently model the processing. It's very expensive and difficult to actually just build a plant and see if it's going to work with a different energy source. And how do you reduce the energy you're using? We're looking at how we can actually model the physical process of these very large vats of solutions that are boiling at 700 plus degrees and so we're building digital copies, twins, duplicates of this process using AI and digital. We can start modeling the most efficient way to take something from ground to the consumer or to the market and we can keep iterating on it in a way that has very little impact on the world but actually then creates a massive positive impact as we can optimise for things like reducing carbon emissions

Anna:

And Jon, what about in your world? Where do you feel that technology maybe will have the biggest opportunity to transform the world of music in the future?

Jon: [22:28]

We're getting so many different sounds because of technology. We're getting so many different applications of combinations of sounds. And another thing that I feel is a benefit of this is it helps to make the process. And the ability to create music at a high level, not something that you only can do if you get a big record deal, or also you come from a family or a place where you have access to all of that. And to me, that's a really powerful way that we hear a lot more voices in music kind of come above the phrase. So I hope that as technology develops and we can do more with less, you start to hear a lot more types of creativity, be able to be created at a higher level.

Anna: [23:30]

Absolutely. Well, we've come to the end of our conversation today. I think tying both of those threads together, one thing that I've taken away is that digitization or the digital world in some ways enables creativity, enables, as you've just said, the democratization of creativity and sharing of that. So it's not something to be feared, something to be celebrated. Thank you both so much for those contributions. Trumpeter extraordinaire, Jon Lampley, and Rio Tinto's Chief Digital Officer, Shawn Lyndon.

Jon:

Yeah, this has been really wonderful. Thank you, Anna. Thank you, Shawn, for having me.

Shawn:

Thank you, Anna. And, Jon, lovely to meet you.

Anna:

Well, it's now time to play ourselves out. But remember, you can listen to more episodes of Things You Can't Live Without wherever you get your podcasts. And don't forget to follow, rate, and review us to make sure that you never miss an episode.