A Head For Music

So what is this music thing, anyway? One-time record producer turned university professor Daniel J. Levitin has written an international best-seller that may hold the answers. Chris Underwood talks to the man himself...

I’m guessing that since you’re reading this article, you’re also probably listening to music, whether you’re subconsciously listening to the music being piped through the store where you just procured this month’s issue of Reverb, you’re sitting on the train listening to an MP3 player or you’re idly thumbing through the magazine at home with the stereo on. Even if you’re not listening to music right now, I guarantee you’ve listened to some very recently, after all – music is everywhere. But have you ever stopped to think about what music actually is?

The Oxford English Dictionary defines it as: the art of combining vocal and/or instrumental sounds to produce beauty of form, harmony and expression of emotion. While this definition suffices on a literary level, it doesn’t really explain how the art produces the beauty, or why we perceive beauty or expression of emotion in something which is essentially abstract. Why does an E major chord on a grand piano sound striking and purposeful while a D minor chord played on an acoustic guitar sounds plaintive and poignant?

How can we even recognise them as different instruments, coming out of the same set of speakers? Why does one song make us want to throw ourselves off the couch while yelling into a hairbrush with joy, while another just makes us want to throw ourselves off a bridge? What exactly is going on inside our heads when we hear a song?

These are all questions that drove one-time guitarist and record producer Daniel Levitin from a life in rock’n’roll to a decidedly more distinguished one in scientific research. As Daniel himself puts it, speaking from his office at McGill University in Montreal, where he holds the Chair in Psychology, “I wanted to learn where goosebumps come from.”

Luckily for those of us interested in this question but without the academic resolve to run our own laboratories (Daniel runs the Laboratory for Musical Perception, Cognition and Expertise at his university) he has written a book - This is Your Brain on Music: Understanding a Human Obsession.

The Magic And The Mystery

So how does one make the move from musician and record producer to high-brow academic? “I started out playing guitar in bands and from there I ended up in the studio producing records,” Daniel explains. “While I was in the studio, sort of as a hobby, I began sitting in on classes at the local university, once in a while, just to keep my mind active. I took a lot of different classes: mathematics, neuroscience, biology. I started to find that my interest in how musicians do what they do and how things happen in the studio were being covered by the neuroscience classes.”

At some point, after he’d been in the music business a while, the business started to fall apart, as he puts it, so he decided to go back to college to take more classes. “I wasn’t really intending to get a degree,” Daniel continues, “but at some point I had one and then... I just kept going.”

Prior to becoming an Associate Professor, Daniel had already acquired a pretty impressive CV. It included arranging many other things - consulting for the first commercial satellite and subwoofer loudspeaker systems, President of 415 records (North America’s first new wave record label), producing the punk classic Here Come the Cops; music consultant on films including Goodwill Hunting, The Crown and City of Angels, putting together a Greatest Hits compilation for Stevie Wonder, setting up the first internet music-recommendation company Moodlogic.com and playing saxophone for Sting and guitar for Whitney Houston and David Byrne, among others. Given all this, it’s not surprising he was keen to know what music was. After all, he had experienced it from almost every angle.

Having enjoyed so much success with music, however, was Daniel anxious that “looking behind the curtain” could take away some of the magic and mystery, that makes music so fascinating in the first place? “Before I started playing in bands, I enrolled at the Berklee College of Music in Boston,” he says. “I remember that the night before I was about to start my studies, I was really nervous that if I learnt everything there was to know about music I might not like it as much anymore. It’s funny because I now realise that was simply youthful arrogance: I mean, how could I learn everything there was to know about music?”
The Language Of Music
While much of the book looks at the neurological processes involved in our appreciation of music at quite an academic level, it also reveals some curious scientific findings. For example, through research experiments carried out by Daniel in the nineties, it was discovered that the average Joe has a remarkable memory for both pitch and tempo. We can remember the beat of a song, pretty much off the top of our heads. Asking people to sing their favourite song from memory, he discovered that people tended to waiver by no more than four percent, an almost imperceptible deviation from the correct tempo. In fact everything most of us can perceive about a piece of music, Daniel suggests, makes us ‘expert listeners’. Almost everyone has an innate ability to detect the tiniest changes in pitch, tempo and timbre in a piece of music.

Playing an instrument, however, as Daniel puts it, “requires the orchestration of regions in our primitive, reptilian brain as well as higher cognitive systems, such as the motor cortex and also the planning regions of our frontal lobes, the most advanced region of the brain.” In other words, everything from the most primitive to the most advanced regions of the brain are working at full tilt if you’re playing a musical instrument proficiently. No wonder most people look as if they’re concentrating pretty hard when they play a tricky piece of music.

Perhaps the most dramatic issue discussed in the book relates to the strong association between the evolution of music and the evolution of language. One cognitive scientist mentioned in the book, Steven Pinker, even describes music as “auditory cheesecake.” Pinker is quoted as saying that “as far as biological cause and effect is concerned, music is useless. It shows no signs of design for attaining goals unlike language, vision, social reasoning and physical know-how and could vanish from our species and the rest of our lifestyle would be virtually unchanged.” How does Daniel Levitin, a musician at heart, feel at this suggestion that music is simply a coincidental by-product of language? “There’s the rather arcane issue that only concerns a few scientists in the world as to whether music or language came first,” he says. “I lay out both arguments in the book and I hope that I lay them out fairly so that the reader can draw their own conclusions. I actually think that there was an evolutionary development in human brains that allowed us to think about thought. It’s what’s called the theory of mind - to know that our thoughts and our knowledge are different from the thoughts of others. The reason that this is so important is that whatever brain developments came along that created this capacity underlies the development of both music and language equally and in fact all art.”

The Science Of A Hit
Does Daniel believe then that having a better understanding of how the mind interprets music can make you a better songwriter? “I’m not sure,” he reflects. “I know a number of musicians who have contacted me and said they read the book and liked it and understood things about themselves they didn’t understand before, but I haven’t heard a musician say it would help them write better music although I do think it could help when recording and producing. Producer Don DeVito told me that after reading the book he finally understood why he did some of the things he’d been doing for thirty years and it gave him greater confidence to go back in the studio and keep doing those things.”

Before Daniel leaves us to further unlock the mystery that is ‘our brain on music’, there’s one final question we have to ask. Can he tell us, based on the vast amount of research he has done, how to write a million-selling, multi-award winning classic? He stops for a minute to think about the question.

“Well... it’s got to be catchy, in so far as people have to be able to remember it even when it’s not playing. It has to have emotional trajectory, so that you’re not feeling the same emotion throughout the whole song. It has to be partly predictable so that you understand what’s going - it can’t use notes that we’ve never heard before or completely crazy chord progressions because it will be too disorientating. It has to have something in common with what’s come before but it has to have a few little surprises that will keep your interest and hopefully if there are enough of them in the right places then it can keep your interest for a lifetime.”

He tells me of a computer program, designed by a scientist named Manfred Klein, which was able to write music in the style of great composers, based on the parameters fed into it. “It does a pretty good job but the music isn’t going to move you emotionally,” he says. It must be missing one important and ever-elusive protocol, the one for which Daniel J Levitin and many scientists are still searching - the one that gives you goosebumps.

This is Your Brain on Music: Understanding a Human Obsession is out now on Atlantic Books. www.groveatlantic.co.uk