



Pop pickers: Mike McCready (left) and Adam Silverman (right) of Barcelona-based Platinum Blue Music Intelligence think they have found a formula for predicting what is hit material



## HOW MANY HITS?

Every day, record company executives try to predict, by gut instinct, whether a pop song will sell a million. But could sophisticated software do the job instead, or even write a chart-topper?

Oliver Burkeman meets the men who claim to have the answer

**A** few years ago, David Sulzer, a senior neuroscientist at Columbia University in New York, decided to write the catchiest song in the history of pop music. The first thing he did was to commission an opinion poll, presenting hundreds of American adults with 50 questions. What were their most and least favourite instruments? Did they prefer songs that moved their emotions or songs that engaged their intellect? Fast songs or slow songs? Country songs, punk songs, reggae songs? Songs about love or songs about politics? Or religion? Or cowboys? “Then I just analysed the numbers on an Excel spreadsheet,” said Sulzer, who in his spare time works as a composer, guitarist and banjo player under the pseudonym Dave Soldier. Sulzer has an exceptionally dry sense of humour, and sitting opposite him in his cramped office at Columbia, it took a while to realise that he meant the whole thing as satire. Nor was this clear from his written account of the project, in which he explained that, using the survey data, he aimed to construct “a musical work that will be unavoidably and uncontrollably liked by 72%, plus or minus 12% (standard deviation, Kolmogorov-Smirnov statistic) of listeners”.

The result, which Sulzer titled *Most Wanted Song*, is a monstrosity. But it’s a horribly familiar-sounding one, like a collaboration between Celine Dion, Kenny G and the world’s worst elevator-music composers. It feels as if you’ve heard it a thousand times, in shopping centres or in taxis, or while trying to find a radio station. “Every day I think of love/I thank the angels up above,” a female voice warbles over a backing of electric piano and twiddly alto sax. “They sent you into my world/Baby let me be your girl...” (Sulzer also composed a B-side, *Most Unwanted Song*, using the same data to create a track he predicted would be liked by fewer than 200 members of the world population. It features abrupt changes of tempo, a soprano rapping about cowboys and plenty of bagpipes.)

*Most Wanted Song* is an attempt to show why using scientific methods to create a pop hit artificially is a preposterous idea. (The record, besides being terrible, sold only 8,000 copies.) So Sulzer seemed surprised when I told him that a handful of companies, away from the public eye, were doing just that: using psychological research and mathematics to try to create the perfect pop song.

“Wait,” he said. “You mean there’s a *company* that does this?” And then he did something he rarely does: he burst out laughing. »



Not many people involved in the music industry like to admit that the whole thing is balanced precariously on one giant, embarrassing conundrum: every year, a handful of songs do much, much better than all the others, and nobody has much idea why. If the hits only did a little better than the non-hits, this unpredictability wouldn't matter. Record labels could invest appropriate sums in each artist – spending millions to promote a new U2 album, say, and putting a couple of hundred thousand behind a promising new singer-songwriter – and be confident of getting roughly proportionate returns. But that's not how it works. Only about one-fifth of artists end up making money for the label, and a few make so much that they subsidise everyone else, but you can't tell in advance which ones will do well. This explains why the success rate is only one-fifth. It also explains Carly Hennessy.

Ever since she was a small child, people had been telling Carly that she had a beautiful singing voice. By the time she was 10, she had had a hit in her native Ireland with Carly's Christmas Album, and toured Europe as part of the cast of *Les Misérables*. By the time she was 18, she was living in Los Angeles, with a six-album contract and an expensive apartment provided by the record label MCA, which was desperate to match the success that Sony was enjoying with Britney Spears. Hennessy received an advance of \$100,000, and the buzz on the west coast was that her first album, *Ultimate High*, would be MCA's answer to Britney's debut, *Baby One More Time*. Of course, successfully emulating the title song of Spears' album would depend on figuring out what it was about that song that makes it so catchy. Is it the chord sequence (one of the simplest imaginable – four main chords cycling through the whole piece)? The lyrics (with their weirdly troubling undertones of violence, though the label's claim at the time was that "hit me" meant "call my pager")? Or the driving, martial beat, which is probably the song's most distinctive element?

Things soon started going wrong. Executives at the label thought Hennessy's voice sounded "too Barbra Streisand", and the album, according to a report in the *Wall Street Journal*, had to be re-recorded from scratch. Some tracks were recorded in the early hours of the morning, because Hennessy's voice was raspy then. It was a very expensive process. By the time *Ultimate High* was released in spring 2001, MCA had spent \$2.2m to make it and promote it vigorously across America.

In its first three months, it sold 378 copies. It recouped less than \$5,000. Carly Hennessy has not released an album since.

"The technology the industry uses is golden ears and gut instinct," says Mike McCready, a shaven-headed 37-year-old who is the leading champion – or villain, depending on your perspective – of the new science of hit prediction. "The sole method of prediction is, 'Does this guy like it?' And 'Does he think it's going to be a hit?' But now we have this technology, the guy licking his finger and sticking it in the air is starting to look really antiquated."

As McCready perches on a stool in a Manhattan Starbucks sipping fruit juice, his breezy manner belies the scope of his ambition. As chief executive of Platinum Blue Music Intelligence, he claims he has invented a far more reliable tool for predicting hits. On computer servers in Barcelona, where McCready lives with his family, Platinum Blue stores vast amounts of data gleaned from every song that has ever made it into the Top 40 in Britain or the



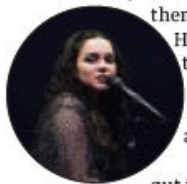
**Sounds familiar:** According to Platinum Blue's research, the reason someone might find themselves liking, say, both Beethoven (above) and U2 (top), or the mellow jazz of Norah Jones (left) and the heavy rock of Van Halen (below), is that their music belongs to the same 'cluster' and shares several underlying structures

Billboard Hot 100 in America since the 1960s, along with millions that did less well. Using a method McCready calls "spectral deconvolution", the company's software can "listen" to a song and, within 20 seconds, extract 40 pieces of information about its deep structure – its "fullness of sound", the instruments it uses, its chord progressions, the cadences of its melodies and more. Armed with data for every hit song since the days when Herman's Hermits and Sandie Shaw bestrode the Top 10, McCready was then able to plot them all visually, in a three-dimensional "music universe". Each hit is represented by a point of light, so travelling through the music universe on a computer screen feels like playing a video game set in outer space, with every star a song.

"And that was when they discovered the clusters," McCready's colleague Adam Silverman says. Logging on to the Barcelona servers from his laptop in another Manhattan coffee shop, Silverman explained the crucial revelation hidden in all these numbers: when the non-hits were removed from the picture, about four-fifths of the songs in the music universe were clumped together in 50 clusters of stars, leaving vast patches of black space between them. In other words, 80% of all pop songs that had ever been hits shared a relatively small number of underlying structures. There was, then, something about a successful song that was non-random, and measurable. It wasn't quite the discovery of DNA, but in the context of the music industry, it was close.

The really strange discovery came next, though: songs in the same cluster didn't necessarily sound similar to the human ear. There wasn't a punk cluster and an easy-listening cluster and a cluster for folk rock. Instead, Norah Jones (jazz) belonged to the same cluster as Vanessa Carlton (pop) and Van Halen (heavy metal). Some classical music had been added to the database, too, and songs by U2 (rock) kept cropping up in the same cluster as Beethoven (classical). "Let's put in *Ballad of a Thin Man* by Dylan," Silverman said, tapping on his computer. David Bowie and Soul Asylum popped up as belonging to the same cluster. Fair enough. Then Silverman selected music by Brahms. "And as you can see," he said, grinning, "it gives me *Laughing Boy* by Hall & Oates."

What makes a song a hit has been analysed before, of course: while record executives may rely on gut instinct and market research, others have long wondered just what it is that makes



doesn't work but that, whether or not it does, acting as if it does will leach the genius out of music by forcing artists to conform to existing styles. "The problem with replacing creativity with analysis is that while, almost by definition, it will work some of the time, it creates a meaningless sensibility," says Jaron Lanier, the philosopher and computer programmer who in his spare time performs on a theremin, an early electronic instrument that produces sounds without being touched by the player. Because the hit-prediction software relies on data from songs that have been hits in the past, Lanier argues, it could never recognise an original artistic breakthrough.

Not long ago, he found himself in conversation with "one of the most influential figures in Silicon Valley". "I wish more kids were learning to be musicians," Lanier said. "In 10 years," the influential figure replied, "computers will be able to use a combination of artificial intelligence and massed data from the internet to generate music much better than human musicians... Musicianship will be an obsolete profession." As a technology type himself, Lanier frequently finds himself despairing of other technology types – and specifically of their belief that computers will one day colonise all human creativity. "This isn't just a moral point, it's *the* moral point," he says. "If our purpose is to please ourselves in the most average way possible, without caring what anything means, we might as well just kill ourselves. We've lost the moral authority to want anything."

There's another hugely awkward question facing

anyone who claims they can predict whether any cultural product – a song, a book, a movie – is going to be a hit. Do things really become popular because of their innate characteristics at all? Don't we really buy albums and novels and cinema tickets because of million-pound promotional campaigns, or because our friends are already buying them? If that's true, the mathematical analysis of music becomes irrelevant. Worse, it might become a self-fulfilling prophecy. If record labels pour money into songs that computers have told them will be hits, and lo and behold they become hits, who's to say that didn't happen simply because of the money the labels poured in?

Matthew Salganik, a young sociologist at Columbia University, always had this suspicion about Harry Potter. "My friends and I used to argue all the time about this," he says. "They said Harry Potter was great; I thought JK Rowling was just lucky. But to find out which, you'd need to have multiple parallel universes. If Harry Potter was successful in most of the universes, maybe he'd be great. If not, he's lucky." Salganik couldn't conjure multiple universes to test his hunch, but he did the next best thing: he designed an experiment that provides perhaps the most fascinating evidence ever gathered about why we really love the music we love.

Salganik and his colleagues placed advertisements on Bolt.com, a music-downloading site popular with teenagers, and managed to recruit 14,000 of them for an online study. In return for taking part, the teenagers were told, they'd be

allowed free downloads of dozens of songs by previously unheard-of artists. They would be asked to rate every song they downloaded from 1 ("I hated it") to 5 ("I loved it"). What they weren't told was that each participant was routed not to the same website, but to one of eight identical-looking ones. Within each website, participants could see what others at that site had already downloaded. So each of the eight sites functioned as a parallel world, with its own, self-contained top of the pops chart.

The results were illuminating – and depressing, if you want to believe that you like certain songs because they are intrinsically good. In each of the parallel worlds, a handful of songs snowballed into hits, receiving far higher ratings than the others. But in each world, different songs became hits. In one example, a throbbing guitar track by the band 52metro came first in one world and 40th out of 48 in another. People were choosing songs on the basis not of quality but of how popular they already were. "We use the behaviour of others as a shortcut for ourselves," Salganik says. "There are so many choices. You can't possibly listen to everything. So you listen to the top 40 chart, and you see, OK, a lot of people seem to be listening to Arctic Monkeys – maybe I should check them out. But by checking them out, you're making it more likely that other people will check them out, too."

After Salganik's study was published, McCready got in touch, and the two had lunch in New York. But they didn't establish much of a connection, Salganik

says. After all, his research seemed to throw the entire idea of hit prediction into question. "I'm worried that the whole thing is just a self-fulfilling prophecy," he says now. "Say the record companies gave me songs they were planning to release, and I flipped a coin. Well, if the record companies really believed what I was saying, and promoted the songs accordingly, my coin would become a successful predictor."

And what of Lee Ryan, Shagger Of The Year? Turn Your Car Around, the song Ben Novak sent from New Zealand to be processed by the hit-prediction software, did fairly impressively. It didn't quite make the Top 10 in the UK, but it was a top five hit in seven other countries, and for a while it was the third-most-played song on British radio. Sony BMG won't reveal how much they spent promoting it, so it's impossible to say whether it performed well for the money. Even if we knew that, though, it wouldn't prove anything conclusive about hit prediction. Did it do well because it was hardwired to be a hit? Or because Sony BMG believed it was hardwired to be a hit, and so promoted it accordingly? Either way, Sony won't be getting any more hits out of Lee Ryan: he recently split with the label, claiming it was constraining him artistically.

Paul Lisberg, head of A&R for Sony BMG, insists his company has never used the software itself. (Novak used it on the Lee Ryan song before Sony got involved.) "You just can't manufacture hits in chemistry labs," Lisberg says. "Music is too much

of a personal thing. To be fair, there is a bit of me that says, 'Would Procter & Gamble put out a new soap product on gut instinct?' But with music, that's basically the way it works."

McCready, for his part, scoffs at the idea that his invention might extinguish the role of gut instinct in spotting talent or exert a lowest-common-denominator effect on music. Quite the opposite, he says: if less money is wasted over-promoting songs that won't be huge hits, there will be more money available for lesser-known artists. "All we invented was an observation tool," he says. "Whether you want the mathematical patterns to be in your music or not, we didn't put them there. We just invented this tool that enables you to see them. You can use it for good or for bad."

There's one way the record labels could test McCready's claims. They could hire him to predict the success or failure of dozens of songs before releasing them – then insist that he give them his findings in sealed envelopes. Afterwards, when each song had either become a hit or failed to do so, they could open the envelopes and judge his success rate. The results could spell disaster either for traditional A&R, or for McCready's firm.

Whether or not hit prediction really works, though, the curious thing was that I found myself wanting to believe that it did. Partly, I wanted to believe because that would mean my musical tastes had some kind of rationale – that I like the songs I like because of something essential to the songs

themselves, not because I'm a sucker for marketing campaigns or my friends' opinions. Mainly, though, I wanted to believe because of something Adam Silverman said towards the end of our conversation in the cafe.

Because different songs within a hit cluster don't necessarily sound the same – the phenomenon that lumps Beethoven with U2, for example – the software can help explain why we all seem to like a handful of songs that don't fit within our normal tastes. As a teenager in the US in the 1980s, Silverman played REM and the alt-rock group Red Cross when his friends came round; he would never tell them that he also loved the cheesy 1960s melodies of the Lovin' Spoonful. "Everybody encounters that," he said. "Like when you're afraid to admit that you really like that Shawn Colvin song or that Kelly Clarkson song."

Hit-prediction science has the explanation: you like that song because it has similar mathematical structures to other songs you like. And so the software offers you a kind of absolution, a washing-away of musical shame. Are you a hardcore Van Halen fan who secretly likes Norah Jones? Well, that's OK now – they share the same cluster. On a deep level, inaudible to the human ear, they both share the same secret formula for success. It doesn't have to be embarrassing to admit to your unfashionable passion.

I shook hands with Silverman, headed out on to the street and, a few minutes later, found myself humming Elton John. ●