

# McGill News

ALUMNI QUARTERLY - SUMMER 2004

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## A Mind for Music: Dan Levitin's Journey from Rock to Research



**Dan Levitin.**  
ARSENIO COROA

**BY JAMES MARTIN**

If you think you can't carry a tune in a basket, then you'll be interested to know that psychology professor Dr. Dan Levitin probably disagrees with you. His research shows that most of us can reproduce a favourite ditty with surprising accuracy, whether we're fans of Frank Sinatra or 50 Cent.

Levitin has been involved in music all his life, composing, playing, recording, conducting and writing about it. Now he's investigating which part of the brain is used to learn and remember music.

Levitin came to McGill in 2000 and is an associate professor in the Department of Psychology. With impressive academic credentials and a couple of cross-appointments in the Faculty of Music and the McGill School of Environment, he's been fast-tracked to tenure. But back in 1977, he was a college dropout. His academic career literally flamed out when he cranked up the volume on the Beatles' Abbey Road in his MIT dorm room, causing his speakers to ignite. He decided he'd rather be spending time in recording studios than in classrooms.

Over the next 13 years, he earned a living as a session musician, commercial recording engineer and record producer - working with artists as diverse as Chris Isaak, k.d. lang and Blue Öyster Cult - and served as Director of Artists and Repertoire for the legendary 415/ Columbia Records. He earned a sizable reputation as a music journalist on the side: his front-page *Billboard* magazine article outed the MCA label as having erroneously released a slew of Steely Dan



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CDs mastered from drastically inferior tapes. The article resulted in a massive, multi-million-dollar recall of the discs and Levitin says he's still *persona non grata* at MCA.

Levitin also dabbled in stand-up comedy, performing on the San Francisco club circuit and contributing the occasional 50-bucks-a-pop joke to the TV monologue mill. His claim to almost-fame came when he sold a joke about then President Ronald Reagan to *Tonight Show* host Jay Leno.

In 1990, wary of creeping conglomerization and accounting scandals in the music industry, Levitin decided he wanted out. Too many eyes on the bottom line, not enough ears listening to the music. "When I entered the music business," he recalls, sitting in his sixth-floor office in the Stewart Biology Building, "there were something like 25 major labels. When I left, it was down to 15. Now there are three or four.

"I don't have anything against making money, but I'd gone into the music business, rather than selling shoes, because music meant something to me."

He seriously considered becoming a llama farmer - but his vegetarian conscience worried the animals were being bought for meat. He considered becoming a novelist - but fortune threw some curveballs. The editor who'd been helping Levitin edit his novel dropped off the radar, only to resurface with a new literary ward: some "Rowling" person with a book about kid wizards. He considered doing stand-up comedy full-time, "but I'd spent too many years clawing my way up to the bottom of the music business that I didn't want to start over in another industry. Besides, other comedians were stealing my material faster than I could come up with it."

Academia wasn't on his career short list either, but after teaching a few courses on record production at Stanford, the autodidact was politely informed that it would look good if he had at least a bachelor's degree under his belt.

Academic friends, including James L. Adams (the Stanford mechanical engineering professor who popularized the term "thinking outside the box" in his book *Conceptual Blockbusting*) also nudged him toward the ivory tower. But what to study? Levitin admits to having had "no idea." Math? Linguistics? Anthropology? Almost anything except music; he didn't think his classical chops were quite up to snuff. Psychology won out because "it seemed the most flexible," with enough breadth to touch on many of his wide-ranging interests. So, at the age of 34, Levitin enrolled as a junior at Stanford.

"It wasn't intimidating," he recalls, "because I knew why I was in school that time around. It was entirely different from when I was 19 and I was in school to get away from home and smoke pot and drink beer. This time, I was in school to learn. When I first started teaching the record production courses, I realized how much I like being on a university campus. I could spend time in the library and talk to a bunch of really smart people - it was thrilling."

Nonetheless, for such a "mature" student there were social challenges. Fortunately, psychology professor Anne Fernald took Levitin under her wing, introducing him to the graduate set. "So although I was taking undergraduate classes, I was hanging out with

grad students, learning what it was like to be a grad student, to do research full-time, and getting a better idea of whether I wanted to keep doing it. I owe Anne a lot for that."

Two years for his bachelor's. One year for his master's. Three for his PhD, and another three for his post-doc. The music-biz guy had successfully reinvented himself.



**Dan Levitin and other McGill musicians join players in California via Internet video-conferencing technology for a concert performed in real time at both McGill and Stanford University.**

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**Left: Bizarro author Dan Piraro with Levitin. Right: Levitin with former Reprise Records president and music biz VIP, Howie Klein.**

PHOTOS COURTESY DAN LEVITIN

Music is still a huge part of Levitin's life. Sax in hand, he's sat in with McGill jazz group the Blue Monkey Project, and he's participated in a jazz concert that saw musicians from McGill and Stanford perform together in surround sound and full-screen video over the Internet in real time using McGill's ultra-videoconferencing system. He's also an occasional consultant on the topic of e-music business strategy, writes liner notes for the likes of Stevie Wonder, advised on the soundtrack to the film *Pulp Fiction* and is currently producing an album by blues guitarist - and McGill MEd student - Dale Boyle.

Of all the hats he's worn, Levitin says his stand-up comedy experience has the greatest impact on his teaching. A charismatic speaker who peppers his lectures with jokes and anecdotes, he says he's not there to entertain students, but does push himself to make the material interesting.

"When you do stand-up," he explains, "you're accustomed to having this big room that doesn't respond, which is sort of like what teaching is. So you get over it, you realize you're not going to get a response all of the time. But I try to get some momentum going so they're interested, and when I see that a certain lecture isn't commanding the students' full attention, I know it needs some work."

In addition to his teaching duties, Levitin is building up his lab at McGill. The current crew count is ten undergrads, "four-and-a-half" doctoral students, one post-doc fellow and a full-time research technician. His research examines musical cognition "using a multipronged approach" of psychophysics (mostly concerned with determining thresholds of detection), standard experimental



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psychology (e.g., how accurately people remember certain things), genetics, and neuroanatomics (brain scans and neurochemical analyses).

Given Levitin's varied background, it's no surprise he's a founding member of McGill's Centre for Interdisciplinary Research in Music Media and Technology (CIRMMT - pronounced kermit), where researchers from varied fields are brought together to study sound and music from varied perspectives: neuroscience, psychology, sound recording, computer science and more. CIRMMT members look at everything from how sound is created, captured and perceived to sound recording and transmission processes and creating virtual reality.

"Dan Levitin brings to McGill a network of contacts from the music and recording industry as well as from the research community in cognitive psychology that has been very helpful in expanding our fundraising base," says Dean of the Faculty of Music Don McLean. "He has a cool and personable style, and coupled with his intelligent willingness to explore new territory it makes him a natural spokesperson for the unique musical art-science mission of CIRMMT that is so special to the Faculty."

Indeed, Levitin could be the poster boy for the arts-science cross-pollination that defines CIRMMT. early in his research career, he investigated how accurately non-professional singers remember the pitch and tempo of pop songs. The experiments revolutionized the common - and rather low - scientific opinion of human perceptions and information retention, revealing that most people do in fact have excellent memories for pitch and tempo. "The Levitin Effect," as it came to be known, is a feather in the researcher's cap to be sure, but he still cringes at the name.

Pitch memory, however, is not to be confused with the rare bird known as absolute or perfect pitch, the ability to identify notes by name or reproduce them without a reference tone. Levitin is currently investigating the mechanisms behind this one-in-10,000 phenomenon.

He's also intrigued by the impact (or, possibly, non-impact) of innate "genius" on musicality. In a series of interviews, he's posed the nature-or-nurture question to Stevie Wonder, Paul Simon, Eric Clapton and others. The superstars largely credit their success to elbow grease and luck, but Levitin isn't so sure. Another aspect of the research has him analyzing the performances of several pianists using a special keyboard which measures the intensity with which they strike a key - and the exact millisecond they strike and release it.

"The crucial fact," he explains, "is that all of the expressive variation in a piano performance - if you ignore the pedaling - comes from only three decisions the player makes: when to push the key, how hard to push it, and when to let go of it. By analyzing the performance of several pianists, we can study what it is about their playing that makes it more expressive."

Levitin's study of Williams Syndrome also involves people with high-functioning musicality - but these talents come at an apparent cost. Williams Syndrome is a rare genetic disorder that creates a unique cognitive profile: the afflicted are often extremely musical, able to

instantly learn and retain prodigious amounts of music, yet have such profoundly underdeveloped intellects that they can't count to ten.

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Working as part of a research consortium led by Dr. Ursula Bellugi of the Salk Institute for Biological Studies, Levitin is studying the musical abilities of Williams Syndrome patients in the hope of illuminating the possible independent relationship between musical ability and other cognitive abilities, with the long-term goal of furthering the understanding of how genes (or the absence of certain genes) affect brain function and behaviour.

Music and neuroscience are a natural fit, given Levitin's background. But what about comedy? Is there a place for humour in experimental psychology? Not so much. Not yet, at least.

"Music cognition is a somewhat new field, although it has historical roots going back to Pythagoras and, more recently, back a hundred years," says Levitin. "The very first experimental psychologists, the Gestalt school, were studying music. But compared to the number of people who are studying other things in psychology, like memory or vision, the number of people studying music processing is quite small. So it's a combination of something with an intellectual tradition but not a whole lot of people working at it that makes music cognition an attractive place to be. It's a fertile field with a lot of low-hanging fruit.

"But there's hardly anybody studying comedy. There's no paradigm as to the brain mechanisms responsible. Nobody's done the foundational work. It doesn't mean it's not interesting, but it'd be harder for someone to bootstrap their way up."



Which is not to say Levitin's forsaken comedy entirely. He occasionally test-drives new material in Montreal comedy clubs, and has a fresh sub-career on the go - contributing gags to Dan Piraro's popular *Bizarro* comic strip. Seen in over 200 newspapers internationally, *Bizarro* is widely heralded as the heir to Gary Larson's retired *Far Side*: one panel (except on

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**A Bizarro strip co-authored by Levitin.**

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weekends), a few words, and a whole lot of absurdist-punster yuks.

When Piraro printed his email address in the strip, Levitin, a longtime *Bizarro fan*, took it as

an offer. "I wrote to him two or three years ago and said, 'I have ideas for cartoons every once in a while. Would you like to hear them?' And he wrote back the same day: 'What do you do for a living?' And I wrote, 'I'm a research scientist.' So he types back, 'Well, I have some ideas for experiments every once in a while. Do you want to hear *those*?'"

Levitin laughs at his own gall. "The funny thing is, being a research scientist is kind of like being a novelist. People are always accosting novelists - 'I have this great idea for a novel' - as though the *idea* is the hard thing to come up with. Science is much the same; ideas are a dime a dozen. The questions are whether they'll advance the field, are they based on solid theoretical foundation, are they doable?

"Apparently it's also the same with cartoonists, but I didn't know that!"

Levitin persisted, Piraro relented, and the rest, as they say, is desert-island gags and clown jokes. Levitin has contributed to 40 *Bizarro* strips in the past 18 months, sometimes offering up fully realized material, sometimes jump-starting a soggy idea. A handful of somewhat "bluer" Levitin-Piraro work recently appeared in *Playboy*.

Most professors don't have gold records, or original comic-strip artwork, hanging in their offices. Most don't finance their graduate studies by remastering the Steely Dan back catalogue, or spend their free time penning punchlines. Still, Levitin doesn't think his polymathic interests are that unusual.



**Levitin and McGill music student Meredith Robson of the Blue Monkey Project.**

COURTESY DAN LEVITIN

"There are a lot of people in this department that have interesting backgrounds," he insists. "One of the things you find at places like McGill, or Harvard, or Oxford, is people who have a real passion for life. That's how they got to where they are. They absorb everything they come into contact with and write about it, synthesize it, experiment on it."

He bolsters his argument with a laundry list of his colleagues' backgrounds and skills. Psychology professor and Canada Research Chair Jeffrey Mogil played keyboards in a rock band called 7 Minutes, who were once signed to A&M Records. Social psychologist Mark Baldwin was the host of *Camp Cariboo*, a popular kids' TV show. Chair of Psychology Keith Franklin "is one of these guys who excels at everything he attempts: pouring concrete, hanging drywall, electrical contracting, plumbing - not to mention neurochemistry and playing blues guitar."

"I guess my own interests are wide-ranging compared to a lot of

people, but I don't think I'm special."

It's all, he says with a shrug, relative.

"I have a friend named E, who is the lead singer of a band called the Eels. I recently had lunch with him in Los Angeles, and he was saying, 'Oh, you've got it made! You've really got the life! You're doing exactly what I want to do!' And I said, 'You're crazy, man - *you're* doing exactly what I want to do.' He's big enough that he makes as much money as he wants, but he's not so big that he can't walk around Hollywood. People don't notice him on the street, they don't know who he is.

"He thinks I've got the perfect career, and I think he's got the perfect career." Levitin chuckles. "Life always looks greener on the other side."

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