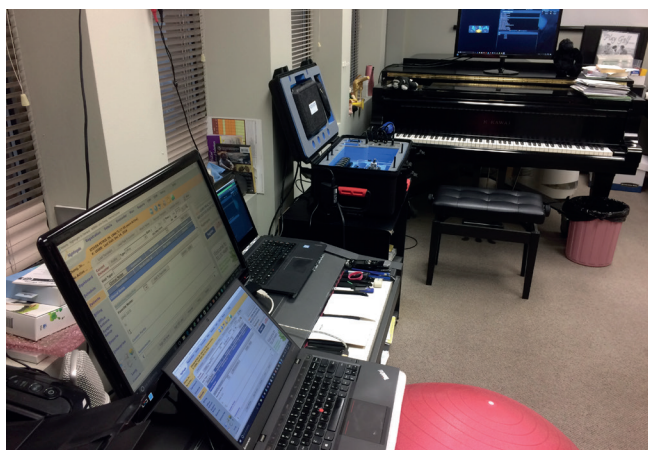


Marshall Chasin: the harmony of music and audiology

BY GARETH SMITH

Marshall Chasin, synonymous with the science of hearing and the art of music, discusses the techniques and technology he has employed over this career... so far.



Marshall's clinic – complete with the piano he uses in a 30-second test to quickly identify cochlear dead regions.



Real ear measurement can be performed while the musician is playing their instrument in order to provide precise sound level measurements with and without any specific hearing protection.

What's the difference between your practice now and when you first started out?

I began working with musicians in the mid 1980s and, quite frankly, I didn't know what was important and what was not. I had been a clinical audiologist for five years already and thought that I knew my way around the clinic. While that was probably true of hearing assessments and hearing aids of the day, that certainly was not true of working with performing artists. About that time, I went into private practice and went from a practice with four other audiologists and a large support staff to being a sole practice audiologist with only a rudimentary logistical structure and staff. This, in itself, was quite a large change. Since then, I have expanded my practice significantly but remain the sole audiologist dealing with musicians and their problems. The largest change has been decades of information and resource expansion as well as a fine-tuning of tests and interventions that are tuned to the needs of the performing artist. Much of that information has been 'translated' for the musician and can be found on my website at www.MusiciansClinics.com.

What developed your interest in music and audiology?

Unlike many of my colleagues, I had never heard of audiology until I was in graduate school. I had done my undergraduate in theoretical mathematics at the University of Toronto and was interested in formal communication systems such as formal algebras – what linguistics would call formal syntax. When graduate school came along, I had three options: pursue a graduate degree in mathematics, become a high school mathematics and computer science teacher, or do graduate work in linguistics. I decided to follow the linguistics route but, after an undergraduate in pure sciences, I found the humanities to be rather 'vague'. That is certainly not the case today but, in the late 1970s, that was the state of affairs. My graduate advisor mentioned the field of audiology to me and that was the first time I had considered (or even heard of) that field. In Canada, the working degree at that time in the field of audiology was the

master's degree and I went to the University of British Columbia on the west coast of Canada. After graduating in 1981, I went to work at the Canadian Hearing Society in Toronto and, in 2003, obtained my Doctor of Audiology degree. While I was a student, in order to make rent I would frequently play my guitar in the local parks. I wasn't very good, but after three or four songs, people moved along, so three or four songs was all that I needed. Shortly after going into private practice in 1985, I encountered many musicians from a local orchestra whose conductor was quite the task master, which resulted in music-induced hearing loss and many physical and emotional injuries. My partners at the Musicians' Clinics of Canada were physicians who took on the physical and emotional injuries, while I took on the hearing loss and tinnitus concerns. I consider myself a second-rate musician but that is probably one of my strengths. You don't need to be a musician in order to work with musicians – just an audiologist. Whether its room acoustics, speech acoustics, earmould acoustics, or the acoustics of musical instruments, the formulae are all the same.

What's in your audiologist's toolkit that you won't be without?

Even though I started working with musicians in 1986, it wasn't until 1988 that the first uniform (or flat) attenuation earplug for musicians came out. I have been recommending these since then and I couldn't imagine working with musicians and not being able to provide these, or similar uniform attenuation devices, to the performing artist. When properly fit, the musician should forget that they are wearing anything in their ears but now can be exposed 32 times as long before damage can occur (with 15 dB of uniform attenuation). Another element in my toolkit is the sheer amount of clinical and research knowledge that has been accrued in our field. Mead Killion invented the perfect hearing aid for music in 1988 (the same year that he came out with the ER15 earplug from Etymotic Research (www.etymotic.com)) and that hearing aid – called the K-AMP – was

IN CONVERSATION WITH

the mainstay for hard of hearing people, musicians or otherwise, who wanted to hear music without distortion. When hearing aids became 'digital' in the early 1990s, our field took a major step backwards. It has only been in the last several years that we now have digital hearing aids that are as good as the 1988 analog K-AMP technology. Real ear measurement has also been an invaluable tool, not only for hearing aid verification, but for the acoustic assessment of musical instruments as measured in the musicians' ear. Another tool that I find to be quite important is my clinical piano; however, given the current state of affairs, any computer-generated series of tones can be just as good. I use my clinic piano (to play very poorly but also) to quickly ascertain cochlear dead regions. If two adjacent piano notes are not perceived to have different pitches, then this marks the beginning of a region of severe cochlear damage where gain needs to be reduced for music, or frequency transposition needs to be implemented for speech. It is a 30-second test – essentially a same/different task whether two adjacent notes are the same or different pitch. This test is as effective, and significantly more clinically efficient, compared with the 8-10-minute TEN(HL) test for cochlear dead regions.

Who are your heroes/mentors?

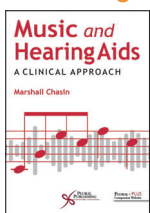
The field of audiology is blessed to have many generous and knowledgeable people that have served as my mentors. Dr Mead Killion has always been there to answer my questions and bend over backwards to help in any way that he could. And Dr Brian Moore, recently retired from Cambridge in the UK, has always been at the forefront of providing translational research that had direct clinical ramifications. There have been others along the way such as Dr Richard Seewald, Dr Robyn Cox, Dr Margo Skinner and Dr Michael Valente who have also been very supportive.

Looking back on your illustrious career, do you have any regrets? Any opportunities you overlooked or misjudged? What do you wish you had done differently?

I don't know how 'illustrious' my career has been – we Canadians tend to be understated over the pond here in the colonies. But to answer your question, I don't have any regrets. I feel good about being able to serve the needs of performing artists while providing a state-of-the-art clinic. Its not altruism – I get as much from working with musicians as (hopefully) musicians get from coming to see me.

I have always had an excellent work/life balance with a proper balance between teaching, research, clinic interventions, and family life. I got to see my kids grow up, and now my grandchildren: no regrets at all. Perhaps I should have invested more in Amazon, Google, and Apple in the early years, though!

In your book, *Music and Hearing Aids: A Clinical Approach*, you identify a number of important research areas. Are you aware of any progress in answering those questions?



What a good question. Yes, each of the unanswered questions are spoon-sized and can be accomplished within the confines of a graduate project such as a Capstone study. I am in contact with students and researchers who are actively working in these areas. The exciting thing is that each of these mini projects has direct clinical ramifications and can inform clinical interventions.



Scan this QR code to read our five-star review of *Music and Hearing Aids: A Clinical Approach*.

When you're not in clinic, where can you be found?

Outside of my clinical duties, I can be found teaching acoustics at the University of Toronto, volunteering with several groups such as homeless shelters, and teaching karate (I am only authorised to beat up five-year-olds – the eight-year-olds come after me). I am also the (volunteer) Editor in Chief of the e-publication of the Canadian Academy of Audiology called *CanadianAudiologist.ca*. and it's free to subscribe to – I am told that I write 'real good'!

I also like to kayak and canoe the lakes and rivers near where I live, and gaze at the Orion Nebula through an 8" Schmidt-Cassegrain telescope on clear Canadian nights (as long as the mosquitoes are not too hungry).

What advice do you have for young hearing healthcare professionals looking to work with musicians?

I have been in this field for over 40 years and still enjoy going to work. I suggest that my younger colleagues find some element of the field of audiology, grab onto it and go for a ride. Pouring yourself into one small corner of our field and watching it grow can be very rewarding, and lends itself to career longevity and enjoyment. I still enjoy going to work and even convincing three-year-olds to hold still while I perform a tympanogram! I don't necessarily suggest working with musicians; it was my choice, but many of my colleagues who are still practising after many years and, like myself, enjoy going to work everyday, have found their own niche areas within audiology, be it vestibular, tinnitus, industrial noise control, etc. For me, musicians are interesting to work with because they allow me to use absolutely everything that I have learned in audiology: acoustics, perception, critical bandwidths and physiology.

Some of your final thoughts? Some thoughts on clinical and cooperative aspirations that may occur by cross-fertilisation internationally?

One of the most rewarding elements of being an audiologist is to liaise with other professionals that I come in contact with. I have met many engineers, physicians, researchers and musicians over the years (and can tell many 'interesting' stories). Audiology is at the crossroads of so many fields – it is the perfect field to be in, and I think that many of my colleagues would agree.



Scan this QR code to watch Marshall Chasin's 2022 Killion Lecture at the American Auditory Society annual meeting in Scottsdale, Arizona, on the topic of 'Music and Hearing Aids'.

INTERVIEWEE



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