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A CHAT WITH DR. RICHARD SEEWALD

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Marshall Chasin (MC) and Richard Seewald (RS) sat down recently for a chat about Richard's incredible career in audiology.

MC: When one hears the name Richard Seewald hearing aid selection and fitting with children come to mind. Were you always interested in pediatric audiology?

RS: Yes Marshall, in retrospect, I always thought of myself as a pediatric audiologist. I began my undergraduate studies like many – not knowing exactly where I was heading. When my father told me that he would not pay for my tuition if I wanted to study music, I was forced to find a major that was acceptable to him. The new program in Speech Pathology and Audiology (formally the program in Speech Correction) had a nice ring to it, something respectable that my father would accept. I must admit that another key factor in choosing this major was that all of the other students in the program were women – sign me up! My beautiful wife Carol, now of 47 years, was one of those students I met in the program. Clearly, I had made an excellent career decision.

Figure 1. Sir Alexander Ewing, June, 1969.

My first mentor, Dr. Walter Carlin, had just returned to the US after obtaining a PhD at the University of Manchester along with a young fellow by the name of Arthur Boothroyd. They had both studied under the supervision of Sir Alexander Ewing. Sir Alexander and Lady Irene Ewing can be credited with the early beginnings of 'pediatric audiology' in Manchester in the 1920s.[1] I have always been proud to consider myself as a 'professional grandchild' of the Ewings. It was

through my relationship with Walter Carlin that I had the honour to dine with Sir Alexander Ewing at a quaint English pub in the bucolic countryside of North West England in June of 1969. Below is the photograph I took of Sir Alexander on that memorable evening is shown below. I recall being surprised (and quite frankly a bit intimidated) by the degree of interest Professor Ewing showed in my scholarly interests and my plans for future study. Only now do I fully understand why taking this level of interest is something that professional parents and grandparents naturally do. Finally, it is of interest and with a touch of pride that one of my 'unofficial students', Dr. Kevin Munro, now holds the Sir Alexander Ewing Research Chair at the University of Manchester – the beautiful circle of life.

My first research assignment was to evaluate a new infant hearing screening procedure that had been reported in the literature by Marion Downs in 1964.[2] The following photo shows me and my buddy performing this procedure. Briefly, we would go to the newborn nursery on a regular basis and present each baby with a 100 dB SPL broadband stimulus and look for a response – an eye blink, some limb movement, a Moro reflex (full body response), the passing of some gas, whatever. Both of us had to agree that we had observed a response for a 'pass'. That was newborn hearing in 1968 and, no doubt, these infants who are now ~50 years old are still looking for me for disturbing their sleep.

Figure 2. Newborn hearing screening using a procedure described by Downs and Sterritt (1964).

Upon the recommendation of Arthur Boothroyd, I chose to carry out my MSc studies at the University of Minnesota. I went to Minneapolis in the autumn of 1969 with some doubts and questions about the infant hearing screening procedures I had used in my undergraduate studies. Consequently, I told my MSc supervisor that I wanted to develop a more objective approach to infant hearing screening that did not depend on behavioural observation. Keep in mind that we did not have ABR or OAE measures at that time and it would be more than a decade before we did. Thus, a literature search indicated that we may be able to measure a response to sound using the autonomic nervous system. The photo below shows me with the system I had developed to measure heart rate responses to frequency-specific sounds.[3] In fact, the procedure did work but, as you can see, the instrumentation required was not exactly ready for clinical implementation.

Figure 3. Instrumentation system developed to measure heart rate responses to sound (1971).

Having completed this research exercise, Carol and I decided to have an adventure before having children. I read of a position for a clinical audiologist at the IWK Children's Hospital in Halifax, Nova Scotia, with a whopping annual salary of $8000! This would be our little adventure that, in retrospect, would affect my career and our family in so many beautiful ways. We arrived by ferry as landed immigrants in Yarmouth, Nova Scotia on a cold and grey and very foggy morning in January 1973, and our lives would never be the same.

MC: Unlike many researchers in our field you also were a clinical audiologist for a period of time. How did that inform your later work?

RS: Many know this story, Marshall, so I shall try to respond briefly. As the story goes, we experienced a major maternal rubella epidemic in the Atlantic Provinces in ~1973. There were three audiologists at the Children's Hospital at that time including myself, Dr. George Mencher and Patricia Stelmachowicz. With the exception of Paul Kuttner, who had gone into private practice in Halifax, we were Audiology for the Atlantic Provinces in 1973. Suddenly, we were confronted with a tsunami of young infants who were being referred to us for audiological diagnostics and intervention. In retrospect, we had very little to work with – a tympanometer, and an audiometer with sound field loudspeakers. That was pediatric audiology in 1973. I can only hope that the families we worked with forgive us for what we did not have and what we did not know at the time. In time, we learned that many of these infants did have hearing loss in addition to other complicating factors. For George, Pat and myself it was a wake-up call and led us all to look forward to developing ways to improve the profession of pediatric audiology. My first thought was to invent otoacoustic emission measures. But then I thought that if I did this, it would leave nothing for David Kemp to do. Consequently, I decided to work on the challenge of fitting amplification to infants and young children. This was at the time when clinical hearing aid analyzers were just emerging. However, with no prescriptive procedures, probe-microphone systems and very crude behavioural diagnostic procedures, what we were doing at that time could accurately be described as 'shooting in the dark.'

MC: Near the beginning of your career your name was almost indistinguishable from that of Dr. Mark Ross. How influential was Mark, and others, in the development of your later ideas?

RS: While in Halifax and still trying to sort things out with the babies, I purchased the first textbook that was entirely devoted to hearing aids – Michael Pollack's 1975 First Edition of *Amplification for the Hearing Impaired*. The book contained a chapter by Mark Ross entitled

"Amplification for the Pre-verbal Child."[4] In this chapter, Mark described his theoretical approach to the fitting problem with infants and young children that I found both interesting and helpful. It was the only paper that I could find that addressed this particular clinical problem and, consequently 12 months later, in the summer of 1976, Carol and I moved with our firstborn to Storrs, Connecticut, so that I could carry out my PhD studies with Mark at the University of Connecticut.

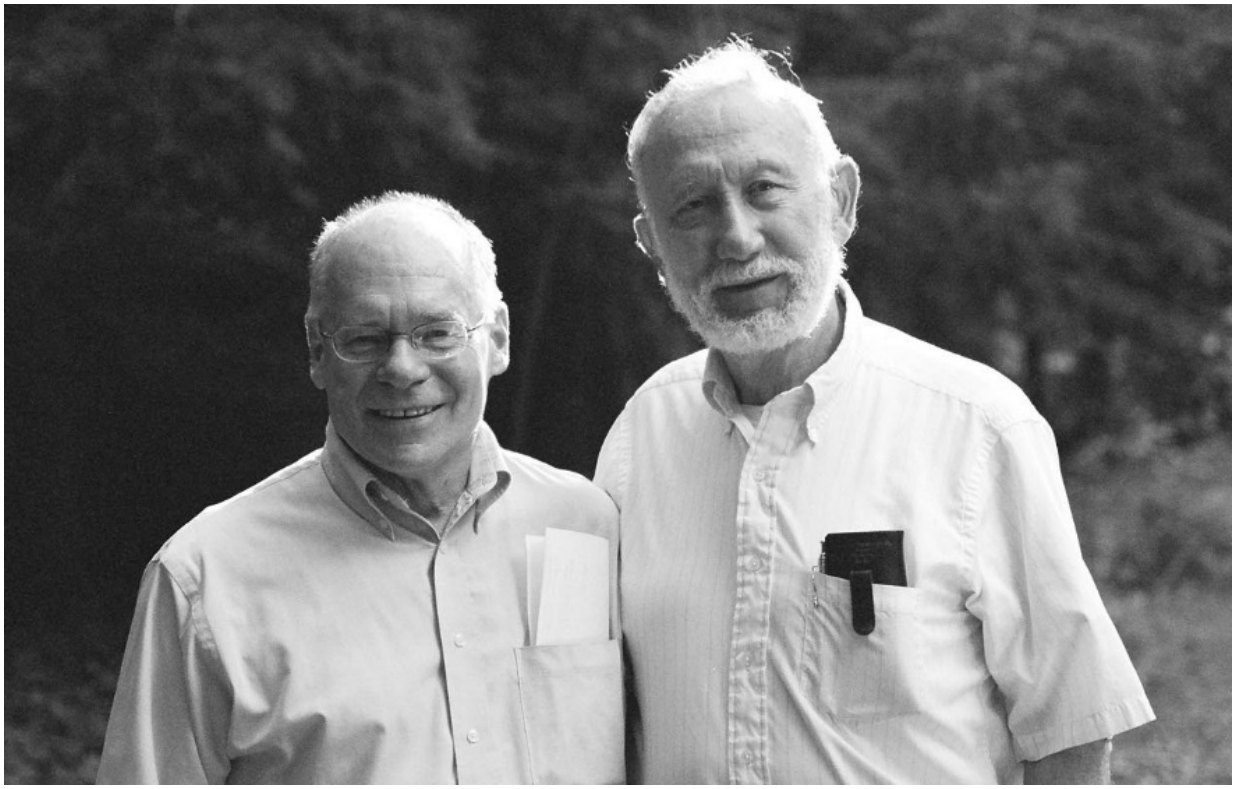

Figure 4. Richard Seewald and Mark Ross at the University of Connecticut. Note the secret formula for DSL v.1.0 hidden carefully in my shirt pocket.

I could not have asked for a more creative, wise and supportive PhD supervisor. Over time, we took his theoretical approach, which used what we now refer to as SPLograms and transformed it into something that could be used clinically. When using his original procedure, it took 45 minutes to do all of the necessary calculations for one ear by hand! In addition, many of the variables that are critical in this process were either unaccounted for or awaiting the development of new technologies (e.g., personal computers, probe-microphone systems, etc.). At the time, I thought that this would be something that Mark and I would work on for a few years and then I would move onto another of the many issues that awaited research and development in pediatric audiology. I certainly did not know then that this one clinical problem would carry me through an entire career! In retrospect, the surface of this problem did not reveal the incredible degree of complexity that lied beneath. As you know, Mark and I published a number of papers and book chapters on pediatric hearing aid fitting before Mark's retirement. He was the perfect 'professional father' for me. Although Mark had the major influence on what in time became the DSL Method, I consumed all of the research and creative thinking that Margaret Skinner, David Pascoe, and Norman Erber had produced at the Central Institute for the Deaf in St. Louis during the 1970s/80s. I also read and re-read each and every paper that Robyn Cox published on issues that pertained to hearing aid fitting. Much of this thoughtful and creative work is still reflected in the most current version of DSL. Those were the most stimulating days of learning and discovery for me.

MC: You have published countless journal articles and book chapters over the years Richard. As you look back, are there any that are particularly key and/or satisfying to you?

RS: Well, as you know Marshall, I am a bit of a perfectionist and rarely ever go back to have a look at what I once wrote. That is never a satisfying experience for me. "I should have done it this way or that way and not the way I did." Nonetheless, I do recall the thrill of seeing my first article in print – Seewald, Ross and Spiro.[5] However, in retrospect, the only article that still satisfies was a little editorial I wrote for the *American Journal of Audiology* in the mid-1990s. It was at that time that all of the universal infant hearing screening people could not contain their excitement about

the development of otoacoustic emissions. I was a bit grumpy with my colleagues who, to my eye, failed to consider all that would be needed after a screening failure – something that I learned though my early clinical experiences in Halifax. I entitled the Viewpoint article, *Universal Habilitation*.[6] A much abbreviated version went like this:

"In recent years, I have given presentations at state and provincial meetings on the topic of amplification for infants and young children. Over time, a consistent pattern has emerged. For whatever reason, the session on amplification for children is scheduled concurrently with a session on otoacoustic emissions. The session on emissions is held in the Grand Ballroom; the session on amplification for children is held in the Riverboat Suite B3, which is adjacent to and no larger than the men's washroom. Surely I cannot complain – *amplification for children* has never filled the Riverboat Suite B3 and the Grand Ballroom has been standing room only. Consequently, I am tempted to entitle these contemplations on the current status of pediatric habilitation: *Otoacoustic Emissions: Follow-up Procedures*. No doubt this would attract the attention of more of my colleagues and perhaps once, just once, bring habilitation into the Grand Ballroom of this profession."

I then concluded my little rant by saying, "Regardless of the specific procedures that are applied or the general structure that is associated with the identification program; regardless of the age at which the identification is made; effective habilitation must be universally accessible to all infants and their families. From the consumers' perspective, the identification and precise measurement of a problem without access to effective treatment is simply an empty promise."

This is no doubt a reflection of the philosophy I had learned through my wonderful days with Mark Ross and was certainly the most satisfying piece I have ever written. From my perspective, these thoughts are as relevant today as they were in the mid-1990s. Certainly these thoughts were foremost in my mind when, along with Krista Riko, Martyn Hyde, Andree Durieux-Smith and Stacey Weber, we set out to develop the Ontario Infant Hearing program roughly 15 years ago.

MC: You were instrumental in the birth and development of the National Centre for Audiology (NCA) at the University of Western Ontario (now Western University). What were the circumstances that led you to conceive of the NCA?

RS: Ah yes, that little project. Those were the days of reinventing ourselves. It was a time in which research funding was scarce and we had just lost a substantial grant from the Ontario Ministry of Health. In addition, there was a freeze on hiring new faculty. Being the smallest and one of the most expensive programs in the Faculty of Health Sciences, the few of us who were left seriously wondered and worried a lot about the future of audiology at Western. After hobbling along for a year or two, we noted that a new 'Centres of Excellence' program had been announced by the federal government – the Canadian Foundation for Innovation (CFI). We knew that it was a long shot but our little group of four (Jamieson, Allen, Cheesman and Seewald) decided to go for it, knowing that we had nothing to lose. The way this worked was that there would be a fierce competition within the university and following this, the university, who would then be in competition with all other Canadian Universities, could only submit three projects at the national level. In the first round, we were ranked #13 internally at Western. This led to more writing and revising and many trips to the main campus to fight it out with the hard as steel scientists who had little respect for 'applied research.' To make a long story short, we were ultimately one of the three applications that Western submitted to the CFI for funding. Needless to say, the basic scientists (a.k.a., the real scientists) on campus were less than pleased for us.

In the end, we were funded in the very first round of the CFI competition. WOW! Following a mini-celebration, we assigned ourselves to the not so trivial tasks that needed to be done. My task

was to raise the required $800,000 from the private sector to secure the grant. Many days were spent driving back and forth on the 401 to meet with members of the hearing health care industry in Canada. On most of these days I felt as if I was working for the United Way. In retrospect, we can never thank the hearing health care industry in Canada for their generous support of this project – it would not have happened without them.

As you know, we held the grand opening of the National Centre for Audiology on October 11, 2001. As you will also recall Marshall, our favourite Maple Leaf fiddle player, Natalie MacMaster, agreed to be with us to celebrate the grand opening of our National Centre – a day I shall never forget.

Figure 5. Natalie MacMaster teaching a child to play the fiddle at the grand opening of the National Centre for Audiology in London on October 11, 2001.

MC: More than any other academic researcher in Canada, your students have gone on to become

amazing researchers in their own right. Can you tell me about some of your students?
RS: I would be delighted to, Marshall. Over my 27 years of teaching, first at Dalhousie (1982–1986) and subsequently at Western (1986–2009) I was blessed to have worked with so many bright and passionate professional and research students. For me, the students you refer to who have gone on to pursue academic careers in teaching and research are no more special to me than the professional students who work in the front lines of our field and who help individuals with hearing and communication difficulties each and every day. And yes, there are those students who sat through my courses, worked in our Child Amplification Laboratory and spent countless hours in my office and, in some cases, consumed countless boxes of tissues while regretting the career in research they had signed-up for. Here is a list of these outstanding students including where I believe they are now in both academic and hearing health care industrial settings and listed in a quasi-chronological order: Andrew Stuart (East Carolina University); Kelly Tremblay (University of Washington); Deb Zelisko (Lifestyle Hearing Corporation); Pam Millet (York University); Frances Richert (Western University); Lori Leibold (Boystown National Research Hospital); Leonard Cornelisse (Unitron Industries); Mary Beth Jennings (Western University); Sheila Moodie (Western University); Steve Aiken (Dalhousie University); Susan Scollie (Western University); Lorienne Jenstad (University of British Columbia); John Pumford (Audioscan, Inc) Bill Hodgetts (University of Alberta); Marlene Bagatto (Western University); Gurjit Singh (Phonak AG); Jeff Cruckley (Starkey Canada); Stella Ng (University of Toronto); Danielle Glista (Western University); Christine Meston (Western University), and Melissa Poloneko (University of Toronto). I could not be more proud of this group of outstanding individuals for who they have become and for their many contributions to our field.

As these individuals will tell you, as a mentor, I was as tough as nails – no more ‘Mr. Nice Guy.’ The following photo was taken just after one of our lab meetings at which I had read all four of them the riot act. No doubt you can see the fear in their eyes!

Figure 6. Research meeting with Sheila Moodie, Jane Steinberg, Marlene Bagatto and Susan Scollie at the Child Amplification Laboratory, 2004.

MC: I know that you are involved in a number of good causes and Foundations. Can you tell me about those?

RS: I would be happy to tell you about this, Marshall. It is the ‘work’ that now gets me out of bed in the morning and that has turned out to be a perfect retirement project for me. For the past 10 years, I have served on the Advisory Board of the Hear the World Foundation. Out of a sense of ‘corporate responsibility’ the foundation is funded by the Sonova Group (Phonak, Unitron, Advanced Bionics, etc.). The primary mission of the Foundation is to build capacity and to develop sustainability for hearing care and communication development projects for children in third world nations. In each year, we fund and work directly with roughly 20 projects globally. A key component of my work is to visit with our project partners, in their environments, to assist them in reaching their project goals. Because of my geographic location, I have largely been assigned to visit ongoing projects in North, Central and South America. Consequently, I have made numerous trips to Brazil, Argentina, the Dominican Republic, and Panama for project development and monitoring. In many ways, I see these activities as bringing me full circle back to the reality of the clinic where I began my career as a pediatric audiologist in 1973. No more fighting with the real scientists on campus, no more endless grant writing and other fund raising activities and no more university committee meetings that consistently went nowhere.

I would like to end this delightful interview with you by sharing a story about one of the children I have met through my foundation work. Jerrimer’s story is not unlike many that I have heard during my travels to these countries with so many challenges. Nonetheless, it is now the children like

Jerrimer who inspire me to keep going in this important work that we all do in our chosen field. And so, in conclusion, I am pleased to introduce you to delightful little Jerrimer who has her dreams for the future, as all children do – dreams that we can help so many children to realize.

Figure 7. Jerrimer, Santo Domingo, Dominican Republic.

Jerrimer's Story

Nine-year-old Jerrimer is a patient at the Centro Cristiano Hearing Centre, the Hear the World Foundation's project partner in the Dominican Republic. She was diagnosed with a severe bilateral hearing loss at age 5. Jerrimer lives with her family in very poor conditions without any basic services such as water, electricity and education. Due to their financial situation Jerrimer was not able to go to school last year. When her hearing aids broke down, Jerrimer's world turned silent and she gradually withdrew from her family and stopped speaking. The change in her behaviour was immediate and due to their financial situation they didn't have the ability to buy new hearing aids for her at that time. However, after several months, she finally received new digital hearing aids, at the Centro Cristiano Hearing Centre, that were provided by funding through the Hear the World Foundation. Needless to say, she was overjoyed. Through the hearing aids she can now enjoy the things she loves doing most again, like listening to music and dancing. Jerrimer says that she wants to become a doctor when she grows up so that she will able to help other people.

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