

# Peter Dallos—A Renaissance Man

By Nina Kraus, PhD

There is a sculptor, whose art I admire, living and working outside of Asheville, North Carolina. His medium is metal—welded steel, copper, brass, aluminum—with sparing use of concrete, glass, and wood. His pieces range from the abstract to the representative (flowers) to the functional (candlesticks). Most of his work is serious and dark, with collections titled “War,” “Struggle,” and “End of the Road.” Some works, such as his “Machines” series also include a touch of whimsy. His work has been displayed in galleries in New York and Chicago, and his entire “War” series is in the permanent collection of the Holocaust Museum in Washington DC.

Oh, and he happens to be the premier auditory neuroscientist of our time.

Peter Dallos brought me into the hearing sciences. I had gone to graduate school to study the biology of communication but had not yet decided which corner of this vast topic I wanted to settle into. Luckily, rather early on, I found myself at a party where someone encouraged me to talk to Raymond Carhart. Readers of this journal know Ray as the “Father of Audiology.” Ray was generous with his time and after listening to me said, “I think you need to meet Peter Dallos.” The way I remember it, he took me by the hand and led me to Peter’s office. Soon after, I found myself in Peter’s basement lab, being shown how to count hair cells in a phase contrast microscope—one of my earliest introductions to beauty in science. With that, my path in the hearing sciences was set in motion.

## SCIENCE IS A DEEPLY HUMAN ENDEAVOR

I learned so many things from how Peter ran his lab. For example, he put time into cultivating relationships among lab members. Every day, the whole pile of us had lunch together around a long table in a room adjacent to the lab. It was there I witnessed the camaraderie that was not only possible but, as I came to understand, an essential ingredient of the scientific discoveries that were coming fast and furious from that lab. Working hand-in-hand with his team, especially Mary Ann Cheatham, his lifelong scientific partner at the microscope and the oscilloscope, the secrets of the cochlea were revealed one after another. These interpersonal interactions experienced early in my career made me realize that science is a deeply human endeavor. It is often overlooked that science is conducted by *people*. People with homes and families and pets and tax returns and *lives* make science happen—scientific



Peter Dallos with an original sculpture from his “Struggle” series.

breakthroughs do not emerge fully formed from unmanned test tubes and unattended computer algorithms. They come from people like Peter, who often brought his young son Christopher to the lab. They come from Mary Ann, and the crew too numerous to mention who cut their teeth in Peter’s basement operation and, with his tutelage, went on to be field leaders today.

## REWRITING THE BOOK

And what discoveries! Peter was one of the first to pay any attention to the efferent auditory system. He took to heart the observation that efferent outer hair cells (OHCs) in the cochlea outnumber the afferent inner hair cells three to one. So, while everyone else spent their time studying the inner hair cells (IHCs), he systematically rewrote the book on the cochlea with his discovery that OHCs do a crucial job in amplification. While IHCs may do the heavy lifting of conducting sound to the auditory nerve, their sensitivity and frequency selectivity depend on the humble OHCs. OHCs achieve this by playing a highly active role in hearing. They change their length rapidly in response to sound, which in turn mechanically amplifies an incoming signal. The protein that brings about the movement of the OHCs was dubbed Prestin, after the fastest musical tempo *presto*, for the biologically unprecedented speed at which OHCs move.



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### LESSER-KNOWN CONTRIBUTIONS

But I do not want to make this little essay about only Peter's science—that is easy to find and learn about. I want to talk about some of the things that would not necessarily come across in his immense contribution to the scientific literature. What a perusal of <https://www.pdallosart.com> will not make clear is his *drawing* ability and how it served his scholarship. Fascinated by drawing since childhood, Peter brought this talent into the classroom. Armed with a pocket full of colored chalk, Peter would produce breathtakingly intricate, accurate, and beautiful sketches of the inner ear or whatever the day's topic was on the chalkboard. As the drawing came into being, he would point out the basilar and tectorial membranes, the hair cells interfacing with the eighth nerve, and so on. By using hand drawing as his medium, the lecture would proceed *slowly*, at a pace exactly suited for learning, which is different from what is common in the classroom today. Computer technology has turned classroom teaching into a barrage of multimedia information, all appearing instantaneously and effortlessly in PowerPoint.

In fact, as PowerPoint became popular, Peter did begin to introduce slides into his classroom. But he noticed it evoked a stark decline in student engagement. The more his hand-drawings were supplanted by pre-made slides, the fewer questions he received from his students. Eventually, when open laptops in front of students became standard, he found that hardly any teacher-student connection remained. As a professor today, I can appreciate the importance of *pace* to effective learning, and the benefit of using one's hand to take notes. Back when I was in Peter's classroom, my fellow students and I were *present* in a way I find is often not true in classrooms today. Although I confess to using PowerPoint for teaching, I agree with Peter that laptops can be a hindrance to the teacher-student connection and they are prohibited in my classroom.

Another skill we could all learn from Peter is his preternatural inability to be rattled. In decades of faculty meetings, I can recall many, many instances of a topic bringing out the worst among us. Venting, arm-waving, heated back-and-forths, and decidedly noncollegiate shouting among colleagues. Peter,

meanwhile, would generally remain silent until the hubbub died down. Then he would clear his throat...and you could hear a pin drop. He would calmly and quietly say a few sentences that cut to the core of the matter. Sometimes his view was unexpected but it invariably contained wisdom. And with that, the dispute would be brought to a reasonable conclusion with all players at least somewhat satisfied.

In a similar vein, for years, I had an office next door to Peter's. On occasion, I would pop in on him, all riled up about some injustice or other going on in the department, the university, the world. He might be in complete agreement with me but he was never ruffled. I once asked him how he was able to remain so calm in the face of the crisis du jour. He said simply, "Nothing fazes you after the atrocities I've seen."

Peter is the person who, in his edits on my draft dissertation, finally drummed it into my head that the word "data" is plural. I can still see his big red cross out through "is" changing it to "data ARE." I no longer make that mistake, and, more broadly, his writing is the standard to which I aspire. There are numerous examples of precise and beautiful writing in Peter's autobiography, "I Was Here!: Life, Science and Art in Turbulent Times." Peter came of age in an era when it was not customary to speak about yourself and your feelings. "I Was Here!" taught me a great deal about him that I never knew from decades of one-to-one conversations. I learned of his history as a refugee from war-torn Hungary and the many difficulties he faced and overcame in becoming the mentor, scholar, scientist, artist, and role model he is.

Peter is a gentleman in the best sense of the word. As such, he inspires a certain ritual and formality. No matter how close one's relationship is to Peter, I cannot imagine anyone running up to him, slapping him on the back, and shouting, "How you doing, buddy?" One of my favorite memories is coming to work on a Saturday with my three-year-old son, Nick. Finding Peter's office door open, I introduced Nick to "Professor Peter Dallos." To my surprise, without missing a beat, Nick said, "Hi, Petey." Peter responded with a big smile, as a gentleman does.

Dear Peter, you will always be a model of the Renaissance Man I'd like to be. 