

# Remembrances of Marshall Leach

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by Tom Brewer



Marshall Leach and Tom Brewer

My first encounter with Marshall Leach was on my first day of classes as a Georgia Tech student in the fall quarter of 1970. At 8 a.m. that Monday morning, I had my first GT class where Dr. Ray Pettit delivered the best lecture I'd ever heard. Then at 9 a.m., I had Electro-Magnetics and Marshall delivered a better lecture. But he wasn't the official instructor for the course. He was a GTA, and the course instructor was his thesis advisor and Director of Electrical Engineering, Dr. Demetrius T. Paris. Confusion for me reigned supreme at the beginning of that class. When I walked in, Dr. Paris was standing at the lectern. He called the roll and asked each of us where we'd gone as undergrads and what EM texts we'd used. The Graduate Advisor Dr. Kenneth Hurd sat on the front row, but did not speak. I had met both men when I applied for grad school. After Dr. Paris' opening remarks, he sat down, a tall young man with prematurely grey hair went to the board and started lecturing, and I commenced taking notes as fast as I could write. Later I was informed he was one of Dr. Paris' thesis students named Marshall Leach. We were told that Marshall would lecture when Dr. Paris was unavailable, but he delivered all the lectures, prepared and graded all the homework and tests, and made "recommendations" to Dr. Paris at the end of the term as to what our grades should be. This was the case for the three-quarter sequence in the fall quarter of 1970 and the winter and spring quarters of 1971.

I got to know Marshall when I went to see him to ask about the homework problems. He paid me a complement by telling me that I was at the top of the class on the homework problems. Later, I found out that one reason was that in many cases, I was the only person trying to work the problems. Marshall often told me that Dr. Paris was a better lecturer than he was, but I wouldn't know, never had the privilege of hearing a Paris lecture. I have considerable respect

and affection for my former boss Dr. Paris—it was he who hired me; if not for him, I would be in Midtown holding up a sign saying "Will Solve Circuits Problems for Food."

Most of the thousands of students who took courses under Marshall only remember him as an analog electronics and audio engineering guy. But, he first made a name for himself the area of EM with near-field measurements on a cylinder. His thesis work and publications with Dr. Paris in the area of near-field sampling are respected works in this area and are still cited in current research.

Marshall began his adventures in electronics almost as a hobby. He would analyze circuits and see if he could improve them, and he improved them to the point that the Leach amps and Leach speakers have a cult following among audio enthusiasts. Strangely, he had no Leach amps at his house and only two Leach speakers. I have 10 Leach amps and 16 Leach speakers at my house and a few more in my office. One of my favorite quotes from a former student is: "Maybe Dr. Leach could hear the difference, but an ordinary human being couldn't." Students were always astonished that Marshall could tell from the sound coming out of a speaker if there was a problem with the audio system and in which part of the system the problem resided. He designed an audio compressor which didn't have the harsh clipped sound of most commercial FM stations, for use by the student radio station, WREK. The student radio station engineers called this audio compressor The Leach-o-Matic. For decades he was the faculty advisor for WREK.



Audio Demo Day in Class

One of the things Marshall and I used to discuss is the time-constant for a GT faculty member. Namely, how long after you are gone will there not be a single student in Van Leer who remembers you. In their day, our friends Bill Sayle and Tom White were well known to every ECE student, but are totally unknown to our current students. I hope Marshall's memory will last longer for three reasons. First, his ECE 3050 lectures are recorded, and I trust these lectures will be made available to any student who wants a first class lecture in electronics. Second, the Audio Engineering course and lab, which are unique to Georgia Tech, should bear his name. Third, his web page is a meticulously prepared web publication, which is both a valuable technical reference used by people all over the globe and a collection of nostalgia for his hometown--it even features a You Tube video of me when I lost it when a concert was being held next to the room where I had a class. He would get e-mails almost daily from every continent on earth (except Antarctica) asking him questions on audio engineering, circuit theory, Abbeville, requests to review papers, how to get into GT, and who that old idiot was in the You Tube video. I do thank him for never placing a photo he made of me in 1972 on his web page. (You shouldn't infer from this picture that I was a long-hair. I was a 1/3 GTA at Tech and decided a barber was an expense I couldn't afford considering what I was being paid.)



Tom Brewer 1972 (Photographer Marshall Leach)

Back in the mid 1980s, the EE students prepared a T-Shirt with a drawing of some of their instructors grouped into three categories: The Good, the Bad, and The Shafts, a takeoff on the old Clint Eastwood movie. Marshall is in front in the Good row holding a speaker upside down and saying, "It's been my experience," which was one of his best known comments. I am on the back row in the Shaft category muttering "d'Arsonval is My Middle Name" which isn't my

middle name and is something I never said. Of the people depicted on this T-Shirt, only Dr. John Buck and I remain as full time ECE employees. The ranks are thinning.



Allen Robinson and Marshall Leach Performing Research



Scan of T-Shirt

One of the reasons for Marshall's popularity with the students was his Open Door policy. I had a math prof once who had only posted office hours. If he was talking to a student and the big arm on the clock pointed up, he would stop in midsentence and state "Office Hours have concluded" and turn around and go back to his other work totally ignoring the student. Conversely, Marshall had a policy similar to my father's. My father had a small business and always said, "If I have a customer, I am open." If Marshall had a student who wanted to talk to him, he had office hours. It wasn't uncommon for him to talk to students in his office, the classroom, or the hall for hours at a time. Another reason for his popularity was that he knew what he was talking about and had the ability to explain it to them. Tech has many brilliant people and many friendly people, but it is rare when the two are combined. I once asked a student why he spent so much time talking to Dr. Leach, and he said it just made him feel better. He had the same effect on me.

Marshall's exploits in the classroom and academia are well known. But there are some stories not well known. When he purchased a house in Decatur, it had a tall oak tree in the yard that was home to numerous squirrels. They did whatever squirrels do and made a mess in Marshall's yard, and he always took a great deal of pride in his yard. So, he purchased a "Tender Trap," which he baited with peanut butter, and when a squirrel was trapped, Marshall would bring it to Tech and release it in the EE parking lot. Both of us got a charge out of watching these squirrels emerge from the cage like a bull from a Seville bullfighting ring. But, no matter how many squirrels he Shanghaied, replacement squirrels kept showing up. He finally gave up and had the tree cut down. During the last few years, Marshall and I would take walks around the campus, and he usually had leftover bread for the squirrels. I think he felt guilt about having taken their ancestors from their home in peaceful Decatur and making them Georgia Tech squirrels.

Marshall moved from Decatur to Tucker, where he had a much larger and nicer house. One day he came home and found someone had broken in and taken some DVDs and \$ 800 in cash. The DVDs were mine and no big loss. I asked him why he would have a large sum of money just sitting on a table. His explanation wouldn't make sense unless you knew Marshall. When he lived in Decatur he would often mow his grass and then go across the street and mow the yard of an old woman who lived alone and who was somewhat senile and demented. She, like everyone, developed a fondness for Marshall, and one day she gave him the cash for safe keeping because she said that her daughter was trying to steal it. The lady died, and Marshall had no idea what to do with the money so he kept it on a table in plain sight and just moved the table with the cash to Tucker where a burglar ended up with the funds.

When Marshall's house was broken into, a lock on a door was broken, and the police who answered the call asked him if he had a weapon with which to defend himself. After they left,



Marshall got the shotgun that his father left him. Marshall had no interest in guns, but he kept it because his father bequeathed it to him. Don't know if it was loaded or if Marshall loaded it, but he held it up, touched the trigger, and it discharged and blew a hole in his kitchen ceiling. I told him that he should have written a testimonial to the Remington firearms company for making a weapon that fired the first time after over 60 years of just sitting around gathering dust.

For decades, Marshall, our friend John Pomakian, who was a technician with ECE for 27 years, and I ate Thanksgiving Dinner at Stone Mountain Park. After John died in 2006, Marshall and I continued to go. This year I started a new tradition for my Thanksgiving dinner: SPAM. I can't go back to that place for many reasons, not the least of which is I don't have Marshall to tell me to the penny what to leave as a tip.



John Pomakian and Marshall Leach

In Shakespeare's Julius Caesar, Mark Anthony says "The evil that men do lives after them; The good is oft interred with their bones." That doesn't apply to Marshall. He never did anything bad, and the good that he did will last for some time. Wish I could say the same about me.