

It is for me a singular privilege to be able to share thoughts about one of the most influential figures in my life, my dear friend George. Other speakers today are addressing George's professional accomplishments, but I am going to hew a bit toward the personal side.

Some people combine extreme intelligence and knowledge for a deep understanding of complicated concepts that the rest of us struggle to comprehend; they see clearly what we see in a mirror dimly, if at all. Some people are gifted teachers who can explain their thinking to others in a friendly and comfortable manner, helping the listener quickly grasp ideas. The intersection of those two groups is vanishingly small, and smaller now that George is now longer with us.

But I want to talk for a moment about music, and not just because George played the banjo and was married to an opera singer (although that is true). A little over a year ago, Garth Brooks received the Library of Congress *Gershwin Prize* for Popular Song. At the award ceremony he gave a great performance in which he sang parts of iconic songs written by people who had influenced him -- I recommend watching this (on PBS), regardless of whether you are a country music fan or, like me, country music is not among your favored genres. After performing he said that although he is a singer and performer, he wants to be remembered as a songwriter.

When I present a statistical concept, I include for my students a formula; e.g., for identifying an outlier when making a boxplot " $Q3 + 1.5*(Q3 - Q1)$ ." *Think of the formula or method as being like the lyrics of a song.* I also present an example; e.g., song lengths on the Indigo Girls CD 1200 Curfews, where Tangled Up In Blue (a Bob Dylan song, hence a different population) is much longer than the others. *Think of the example like the music (tune) of a song*, which is memorable, it sticks in the brain.

There are composers who create beautiful music. There are poets and lyricists who write meaningful words. Songwriters combine the two. Here I borrow from music critic Ben Leven who said that *music makes you **feel a feeling**, lyrics make you **think a thought***, but *a good song makes you **feel a thought***. George was a statistics songwriter. I was blessed to join the choir and to provide some harmony for George's lead voice. I was part of the E Street Band while George was The Boss.

George was brilliant -- his DOE book presents structure, connections, and the big picture of how statistics supports scientific inquiry; his MCMC work was mathematically deep; he used geometry (e.g., the projection operator for MLR) whenever possible; I remember being in Princeton at a meeting of a Park City research group on mathematics and statistics education where George dazzled the room with his piercing insights; I sat and took notes.

George was creative -- he developed "gummy bears in space" as an activity for teaching factorial designs, among his many other ideas. He explained to us the construction of a Bayesian posterior distribution in a clever way. [see "Cobb Laplace Bayes.pdf."]

George is widely known for his flare as a writer (as an undergrad George majored in Russian, because he loved the patterns in Russian poetry).

It was a treat to watch how George worked. I remember sitting at a table in his house a few years ago when the two of us were working on a section on repeated measures ANOVA for the second edition of the Stat2 book. When I say "the two of us were working" I mean that I was watching George work. He had a stack of books next to him and a pad of paper -- he always wrote things out longhand. He outlined an approach to the material and started to write out notes. The next morning he tore up those notes and started over. The following day he did the same thing, as he wasn't satisfied that he was taking the right approach, but eventually he came up with something he found satisfactory. He worked slowly to get great results, valuing quality over quantity (something I am still trying to learn).

George had a profound influence on the profession by helping us see the big picture (e.g., his USCOTS talk on Ptolemaic curriculum) in addition to knowing the details and being able to explain them; he challenged us as a profession.

But George's songwriting ability extended beyond his work in statistics. Over the years I had countless conversations with George, some about statistics education, some about statistical consulting, some about the field of statistics generally, but sometimes we would talk about politics, or philosophy, or even religion. George was a masterful storyteller and his life was a powerful and beautiful song.

George called out the difference between abstract structure and context in statistics. This carried over to how he treated people: he was a true friend, not just asking "How are you doing?" but really caring about my family and about me -- context, not mere abstraction. I could turn to him for counsel and advice and get a compassionate ear.

George was humble: he was always the smartest person in the room, but he never said so.

He was encouraging. Just a few days ago I testified in a hearing about alleged Medicare fraud. We call this "Ed work" at my house, since the lawyer I work with on these cases is named Ed. George had been working with Ed for a few years and found that he needed help with the growing load of cases that were coming in at the time, so he brought me onboard as his statistical partner. The two of us worked together on many cases over the years and we also worked on an age discrimination case with a different law firm. But most of it was Medicare fraud work,

which had some interesting twists and turns, most of which were figured out by George, who then helped me understand how to think about the issues -- and how to testify in a way that a judge can understand.

He loved life. This included single malt scotch, good restaurants, and traveling. When ICOTS was in Morocco we sat on the lawn behind his hotel in the evenings in a place that we called "Chez George." When ICOTS was in South Africa, it was George who pushed us to go to Zimbabwe to see Victoria Falls.

George loved to tell stories and jokes (e.g., Kissinger and "now I'll read it.")

He was a man of values (ICOTS9 in AZ when the state passed an anti-immigration law...)

I have been in countless discussions in which George added knowledge, insight, and leadership. The rest of us were like children with ideas that mom and dad then illuminate, letting us know how the world works.

I miss George greatly.