

Statement of Outreach Experience and Philosophy

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There is a unique feeling that you can only experience by performing in front of an audience. This feeling cannot be replicated in private. Most people spend their whole lives avoiding appearing in front of a large audience, and thus never have the chance to acquire the unique feeling. Moreover, their fear in the moment overwhelms their emotions and causes them to not recognize the magical feeling for what it is. My ability to thrive in front of the largest audiences has created an addiction to that feeling.

Shortly after I was old enough to walk and talk, I began classical training on the violin. As a result, violin performance has occupied a large portion of my life. The countless number of stages I have performed on around the world have shown me that art is not truly complete until it is shared with an audience. Somehow, the immense joy I already experience from playing the violin in the privacy of my home is amplified just by playing the same works with an audience sharing the experience.

In science, I have learned to recognize the same phenomenon. Scientific discoveries never feel complete until they are shared with the public. The process of writing a scientific publication, presenting the results at a conference, and disseminating the findings through media channels brings meaning and a sense of fulfillment. Moreover, each successive dissemination amplifies the fulfillment. Of all the many publications I have helped create, I garner the most fulfillment from the ones whose results were appealing to a mass audience and I was able to share the results via media releases, newspaper articles, magazine stories, interviews, social media engagement, public lectures, etc.

Being both a musician and a scientist, I experience the most joy from a synergy of the two. First, I love the mathematics behind music theory. Second, I am constantly in search of new pieces of music that draw inspiration from science, and primarily astronomy. Of course, I have enjoyed performing popular pieces like Holst's "The Planets," but there exist many more works with fascinating stories of their own.

For example, when I was living in Australia, I was friends with the members of the Australian String Quartet. Before one of their concerts, I was having dinner with them and mentioned that the final piece on their program the following night, Beethoven's "Cavatina," was the final piece on the Voyager Golden Record. This was new information to them, so I proceeded to tell them the history behind the Voyager Golden Record, and the history behind Beethoven's composition of the work. They were fascinated by the stories I told them and immediately said that I had to share my stories with their audience the next evening before they performed the piece; I agreed.

The next evening, I took stage prior to the final piece on the program and proceeded to tell the stories to the audience. Because the subjects of Beethoven and Voyager were so near and dear to my heart, I did not require any notes. I merely stood in front of the audience and became a storyteller for the next 15 minutes, sharing the wondrous tales. The ensuing performance was magical.

The combination of the stories behind the art and science added to the experience of the performance and the union was greater than the sum of their parts. It was an emotional experience that brought me to tears while I listened to the music. After the music ended, the quartet invited me up on the stage to take bows with them. It was one of the most rewarding experiences of my lifetime.

At the reception following the concert, I had conversations all night long with audience members who were awestruck by the experience and appreciative of the added meaning and value that I added to the concert. The concert was a huge success, so the quartet decided to play an encore performance in another city and invited me to repeat my pre-concert storytelling. In the years following that experience, I formed my own string quartet and performed the same piece with our ensemble several times. Performing the piece myself etched my connection and ties to the music even deeper in my cherished memories.

Ultimately, that is what I derive from my philosophy of outreach, i.e., storytelling. Meaningful outreach has to convey and tell a story to the audience. Modern humans are descendant of prehistoric storytellers. Thus, our shared connection and desire to hear oral stories is part of our nature.

Whenever I am conducting public outreach or standing in front a lecture hall full of first-year physics students, I always try to teach via stories. In my introduction to pedagogy, I was always told that "telling is not teaching;" I

found this to be true. Merely relaying new information, like a smart speaker connected to the internet, fails to tell a story. Without the connecting story, the information becomes nothing more than a bit of new facts that can be quickly heard and quickly forgotten.

In conclusion, I hope to always find opportunities to share my love of art, music, and science with wide and varied audiences. I will strive to continually draw from all of my talents and experiences to craft the most engaging and memorable stories. When I succeed in creating these emotional connection, I personally grow and learn so much. Fortunately, the growth and learning is not just for me, but shared freely among all who listen.