

## For Vaughan Jones

I have been fascinated by Vaughan’s mathematics, both then and now—ever since I got to know his early work in the 1980s relating knot theory invariants to von Neumann algebras. Vaughan was interested in quantum field theory, so we often overlapped in conferences and meetings. For this reason, I am unsure when we first met. However here I will speak of other things.

It was during a conference some thirty years ago (I believe in London) that I first observed an aspect of elegant style and grace about Vaughan which complements his mathematical excellence. So let me digress. I have been privileged to become acquainted with many wonderful musical artists. Their elegance of presentation stands out to me as unique, seeing not only the content of their presentation, but also their personal impression they project. I became sensitized to this when I observed Vaughan at that meeting, as the organizers asked Vaughan to open the evening reception with some words. His elegant, off-the-cuff remarks were thankful to the organizers, inspirational to all the listeners, yet modest and down to earth. The warm ambience of the occasion remained with me ever since, as does the recollection that I had believed no other person in the room could have woven such magic.

In 2016 Vaughan gave the opening talk at a meeting I helped organize at Harvard. A couple of days before his talk, Vaughan looked at the room with 8 blackboards in the front: four to the left, and four to the right. In his talk Vaughan started at the top of the first board; when it was full, he raised it to the top and started on the second, etc. Vaughan finished exactly on the hour, filling the last space on the bottom of the eighth board. Afterward he remarked to me, “that was the most difficult lecture I have ever given.”

Vaughan got me into deep trouble. This arose from Vaughan’s being a member of the nominating committee for the American Mathematical Society; the trouble came from his asking me to stand as a candidate for president. I accepted with the firm belief that the other candidate would win the election; that person had served the Society so well. While I was wrong, I did not regret learning so much over the next four years from that experience.

Much later, Vaughan gave me a gift whose dividends continue today. Vaughan’s first student at Vanderbilt, Zhengwei Liu, became my postdoctoral fellow; and Vaughan’s last student, Jun Yang, is currently in that position. I am eternally grateful for the gift of these two wonderful mathematicians. I began an entire new direction in research in 2015, when Zhengwei taught

me planar algebras, and we found generalizations that provide useful insights into quantum information. This reflects that Vaughan not only started a new subject, but he mentored many extraordinary students.

It was through these bonds that I became closer to Vaughan. I was able to arrange a special visit for him to Harvard in 2016, as well as a public lecture at the Academy of Mathematics and System Science in Beijing in 2019. I invited Vaughan to participate in our online seminar, that we began during the CoVid lockdown. He gave a beautiful presentation in the “Mathematical Picture Language Seminar” on July 21, 2020, which can be viewed on Youtube, during which Vaughan fancied “Applied von Neumann Algebras.” To my knowledge this was Vaughan’s last public talk. His passing was a tragedy, and our entire mathematical community misses him dearly.

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