

Ramki's Reminiscences of Arnie Fredrickson

With Arnie Fredrickson's passing, Minnesota has lost an indomitable scholar who was as good a teacher as he was a researcher. As one of his early students (perhaps the second, the first being Rich Miller), it gives me great pleasure to reminisce about a person who was much more than an advisor. He was a friend always ready to pat his students on the back whenever they did something of substance.

Arnie Fredrickson got his Master's degree in Chemical Engineering with Art Madden, and under advice from Neal Amundson, went to the University of Wisconsin to get his PhD under the direction of Bob Bird. Arnie joined the faculty at Minnesota in 1960. By 1964, he had published his book, *Principles of Applications of Rheology*, with Prentice Hall. For the scholarly compilation it was, Arnie's decision to move away from the field to seek greener pastures in modeling microbes came as a surprise to me. It is my belief that the presence of Henry Tsuchiya, who was my second advisor, had a lot to do with that decision. Rutherford (Gus) Aris added to the team with mathematical insight that was always special. The article by Tsuchiya, Fredrickson and Aris in Volume 6 of *Advances in Chemical Engineering* provides a flavor of the spirit that prevailed, one of perspective, depth and commitment to changing the field. It was for me an adventure ripe with excitement and free thinking naturally interspersed with occasional arguments. One in particular that comes to mind was an issue of derivation which produced more head shakes than nods but ended happily with a demand that I terminate my visit to India (which was to get married!) and return to resume work!



Although it was never unclear when Arnie liked to be left alone, I cannot ever recall a moment of conflict with him! He was always supportive, an attribute that can be found in the foreword he wrote for my book on *Population Balances*. Colleagues in academic departments where Arnie had delivered seminars would report back to me his commendatory reference to cybernetic models.

Arnie wrestled with fundamental issues in exacting detail sometimes to his detriment on priority of publication. Our paper in the very first issue of *Mathematical Biosciences* in 1967 on the application of population balances to microbial populations was at least four years late in its publication. It did not concern him because he could tell no story until it was complete in all the respects with which he began its narration. This was a trait that followed him all along his academic life because his book on Thermodynamics never got past the local printers in the department! Anyone who taught the recitations for his undergraduate course in Thermo will remember struggling with concepts such as availability! In this trait, he was very much in the category of Skip Scriven who was also never satisfied with any write-up.

Association with Arnie went well beyond the domain of academics. For example, Arnie and I went a couple of times to watch the Minnesota Twins during the days of Harmon Killebrew, Tony Oliva and Camilo Pasqual. Arnie had a great sense of humor and liked to tell stories.

Arnie had a red Jaguar that is rumored to have set some records of which local law enforcement was unaware but reminding him of that period did lead to some self-admonition! This period was followed by one of steady decline in the quality of his four wheelers until its culmination into a jeep, which was charged with carrying a heavy, pricey camera especially on his tours for aerial exploration of birds. He would stop over at our home for the night on many of these trips which also gave us an opportunity to go to dinner with him in a local Japanese restaurant. On one such visit, I am amused to recall that he had run out of gas on I-65 (fortunately only a few miles away from us) and I rushed to his rescue with enough gas to get him home! If I reminded him of it, he would quip back in return, “what about the time you locked yourself out from your car with the engine running?” This was right in front of his home!

Arnie took exceptional pictures of trumpeter swans, and Geetha and I loved to hear of his insight into their behavior. He had expressed a desire to compile his discoveries into a book which unfortunately did not happen.

No reminiscence of Arnie would be complete without mention of his lifelong friend Dorothy, who has been particularly dear to me and my wife. I recall Arnie chiding me in good humor not to spend as much time in the Biomedical Library where Dorothy was a Librarian because she was his girlfriend!

Arnie’s passing has left us sad in his remembrance but all that he has given us will sustain us in what is left.

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