On Lloyd: Some Personal Reminiscences

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Lloyd was always very kind to young scholars and in my case he showed extreme generosity.

I had the great good fortune to be invited by him to the RAND Corporation in the summer of 1974 while I was still doing my Ph.D. at Cornell. When I entered the room of the motel in Santa Monica at night, I found a hand-written note of welcome from Lloyd with a diagram on how to walk to my office. Struggling to get up early the next morning, and donning a tie I that I had bought for the purpose, I went to RAND to await the arrival of Lloyd.

The hours ticked by slowly until finally around 3 pm there was a gentle knock on the door …. And there was Lloyd, informally clad, standing somewhat shyly, eyes a bit lowered, hand extended, saying "Hello, I'm Lloyd. Would you like a cup of coffee?"

He had won my mind a long time ago --- for he bestrode the whole of Game Theory like a colossus --- but in the very first moment of our meeting, he put me at ease and won my heart too. I think I hastily removed the tie that was strangling me, before even shaking his hand.

We plunged right away into a problem on "normalized Banzhaf indices" --- a lesser-known cousin of the famous "Shapley value" which had attracted the lion's share of attention --- that I had been working on. I had figured out the symmetric case but was stuck on its generalization. Lloyd immediately suggested that I look instead at the variant notion of "probabilistic Banzhaf indices." This panned out quickly and very well. I remember calling him up excitedly at his home to say: "How did you know?" to which he just chuckled.

Shortly after that Lloyd arranged for me to give a seminar at RAND, and when he came to pick me up at his office, he said, "You will have an audience of low quantity but high quality." It turned out there was, besides him in the audience, just Hakukane Nikaido. Professor Nikaido was polite but taciturn in a manner that only the Japanese have mastered. However Lloyd asked a host of questions. That dialogue turned into a collaboration with Lloyd.

We went back to the thorny "normalized Banzhaf indices" and were stuck on the original problem for quite some time.

One day, in my frailty I called Professor Harry Kesten, an expert in probability theory at Cornell. He suggested that I contact Professor J.H.B. Kemperman in Rochester. He in turn referred me to a recent publication of his own which contained the key to the riddle. I remember running down excitedly to Lloyd's office in RAND, and blurting out, "There is this paper of Kemperman which gives conditions under which our convergence result will obtain."

Lloyd was sitting with head bowed over a paper pad, but his eyes at once shot up and he said, "That's cheating!" It turned out that the pad contained an ingenious counterexample that Lloyd had invented to show the failure of convergence in the absence of Kemperman's conditions. Thank you, Lloyd, for showing me such high standards of research at the very outset of my career!

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Over the years, I got to know Lloyd and his charming wife Marian at close quarters. My wife Lushin and I were delighted and honored to be frequent guests at their beautiful home in Pacific Palisades; they also visited our abodes in New Haven and Stony Brook. There was never a dull moment in their company.

I enjoyed meeting alone with Lloyd to discuss Game Theory, especially in the course of our three joint papers. On one such occasion he was visiting Yale and staying with his old friend Martin Shubik. In Martin's living room the three of us engaged in an animated discussion on strategic market games**. Much of the animation emanated from Lloyd, of course, on whom Martin had bestowed the title "Knight of the Gnarled Fist."** We finally broke up at 4 pm and I left with injunctions to come back at 7 pm for dinner.

Upon my return, Lloyd was poring over the remaining pieces of the game of Go. Lloyd was explaining to Martin that if Martin had not made a particular move earlier in the game --- a wild move that no rational player would ever have dreamt of – then Martin would surely not have gone on to win the game! **As Martin used to say, "No matter what happens in the game, Lloyd always wins the analysis".**

My dear, dear Lloyd was a friend, philosopher and guide not just for me, but for many generations of game theorists. All of us continue to be inspired by your work. You have never in reality left us!

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