

THE METRIC OF GREATNESS

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I am not awed by face-to-face meetings with famous people and have never gone out of my way to see or meet a celebrity. There was the occasional hanging about backstage after a rock concert in my teen years, waiting to catch a close-up glimpse or autograph of a favorite singer. But I always grew impatient after twenty minutes and should the star appear during that time he or she always seemed smaller, less of a person than I had hoped for and there was no action I ever attempted that attracted personal attention from any of them.

The post-Sputnik flurry of scientific investment by the government created a certain number of mathematical superstars whose achievements dwarfed the rock stars' attraction in my earlier life. These scientific intellectuals changed the landscape of mathematics, bringing order and sense to areas of mathematics that barely existed prior to their endeavors. My generation of research math students were taught from their work, worshipped their clear illuminations of previously murky conceptual waters, and clung to each new published paper by them until fully annotated and understood. Throughout our training, and in due course, we learned by heart their theorems, mimicked the pioneering techniques of their proofs, and awaited the work of each of their best Ph.D. students for additional scrutiny.

These successful scholars became professors and chose prestigious and highly paid positions at academies all over the world, including in addition to the usual elite American universities, the studentless Institut des Hautes Etudes Scientifiques, located in a suburban setting outside Paris. This small French commune of ten thousand residents was the primary address of the man about whom I now write. Not having had very many opportunities to travel abroad during graduate school, and being ignorant of all mathematicians living and dead before that, I had seen only a few of the European great men of mathematics who traveled the conference circuit on the other side of the Atlantic. By the time the events in this story took place I had read many mathematics books and papers, and in my mind had made some of their

creators into heroes, but not the sort of hero whose physical presence I sought. Listening to, or rather appreciating a research math talk is a skill I had not yet developed, but I attended many of them anyway at the advice of my Ph.D. advisor. In my limited experience most famous mathematicians, especially the older ones, had deeply flawed speaking skills and heavily accented English. It was a painful exercise during many talks to superimpose the talking head of such a weak orator on the confident and elegant author of my favorite math papers.

Moreover I was in my mid-twenties and an unmarried woman whose limited time for socializing was spent in the company of young and single men and women, most of them math or scientists in training like me. There was little appeal to seeking out the company of these older men of math, many of whom it was said, lied as habitually as their guitar-toting contemporaries about their current marital status to fit the sexual opportunities with which they found themselves presented at conferences.

Therefore I thought little beyond traffic congestion thoughts when my Ph.D. advisor Bree Moriarty found me in the lobby of my hotel, checking in for a conference, and asked me to go to the airport to meet the mathematician who had exerted the greatest influence on my mathematical training. She was the co-organizer of the conference, which was in honor of his 75th birthday and it was being held at the university where I had completed my Ph.D. under her tutelage a year earlier. She in turn had been one of his proteges and while there was a lot of speculation about what their relationship had been during the time she was his student, I had no reason to believe she was anything but a genuinely brilliant mathematician. Dr. Moriarty had remained somewhat of a mystery to me during the time I was her student; I knew only a few personal things about her. She was originally from Dublin, left Ireland to attend graduate school in Paris, and worked with Benterou at a Paris university where he had a nominal position allowing him to train students. She married an American historian whose job at the Smithsonian brought her to the university where I met her and became her student. What she thought about ending up at a second rate university as a first rate mathematician I never knew. On the other hand, I was familiar with every one of her sixty publications, and had been involved in proofreading the three most recent ones.

“How will I know what he looks like?” I asked her, thinking of the crowds that spewed forth from one small doorway in the airport terminal. “Do you have a photo on a book of him?”

It turns out that he assiduously avoided cameras, apparently due to a sagging of the left side of his face which had been caused by an incompetent dental extraction forty-five years earlier and she had no photo. “You’ll need to carry a sign with his name on it because he’ll be looking for me or a young man”, she warned. Then she let out an abbreviated laugh that sounded more like a cough. “I told him I’d send my best former student if I couldn’t make it, so I’m afraid he’ll be looking for a male. Oh, and wear a suit or a dress or something. The place he’s staying at has a dress code of business attire.”

A placard with a large handwritten “Prof. Philippe Benterou” in hand, wearing a straight skirt and white blouse off I went, feeling somewhat elated to be the one to write in large letters the name of this great man. He had won every prize possible for a mathematician, including a Fields Medal for his work on three dimensional manifolds and a Nobel prize since his work had applications to physics. The elegance and facility with which he connected all the dots between apparently different areas of mathematics and physics made him stand head and shoulders above his peers. He had been awarded medals of honor and recognition from heads of state and royalty in virtually all the western European countries, and published over 200 papers including 15 large texts.

I arrived at the airport early and stayed near the television screens showing the arrivals of various flights. When it showed that his flight from Paris had landed I hurried to the security opening to watch the people enter the terminal. I held my sign up and watched every suited gentleman with gray hair as well as the casually dressed. When the flow was reduced to a trickle I began to worry that I had missed him and the famous Philippe Benterou was waiting elsewhere for his ride. After a few more minutes a short round figure appeared and headed towards my sign. He nodded and approached me saying “I am Benterou.” I held out my hand and was momentarily overcome with awe and shyness to be in the presence of such genius. I gave him my name and felt compelled to say “My Ph.D. advisor Dr. Bree Moriarty sent me to fetch you.”

He craned an ear towards me as the terminal was loud. “Who? Bree Moriarty? Yes, yes, good. Quite a lovely woman she is. And you too. And she was a spunky young thing. He he, I suppose you are too. How are you? I hear some nice work of Bree and her student recently generalized the ergodic metrics on the Benterou-Muhlenberg manifolds to higher dimensions. I hear it’s a nice little piece of work.” I couldn’t be certain whether the remark was about my work or my advisor’s, but I thanked him for his kind words and bowed my head slightly. “As a matter to the fact, I predicted that result in 1975”, he added, “but my students at the time were too how do you say, hepped up about the

metrics in dimension three to work on it. I am happy to have it done finally and especially by someone as beautiful and hospitable as you.”

There were several things about him that were simultaneously remarkable and repulsive and caused me to stare speechless at his countenance. One was that he spoke English in a completely unaccented way through yellowed teeth that had turned brown around the edges, even though he sometimes paused to remember a word. His was not even British English, but American, though the words didn't flow like a native American's would. And the teeth were clearly not the product of American dentistry. The other was Professor Benterou's head. His fly-away white hair was long in parts and completely gone in other parts; what some elderly men might fashion into a comb-over was just left to sway out from his shiny scalp forming a sort of halo of white light that followed him when he moved his head about. The sag in his face was not noticeable until he spoke, and then it made him appear to be winking in a conspiratorial grin. He wore small wire-rimmed eyeglasses with round lenses and otherwise he was dressed in a wrinkled outfit consisting of a pair of black trousers with a corduroy jacket and wrinkled and rather dingy white shirt. Finally the arrogance and misogyny of his words gave me a small jolt.

We loaded his luggage in my car and left the airport. I commented on his perfect English and he laughed. “I was born in Brooklyn - my mother's name was Sophie Waxman, and we moved to Europe as soon as the war ended - I am actually an American Jew. My name is Philip Benterou, not really Philippe, and thank God for the French Catholic father's name, but I published my first paper in France just after the war as Philippe and then it just stuck. It was sort of expected with a name like Benterou that I should be a Philippe, not a Philip.” He chuckled to himself, as if he had made a clever joke.

At his request he was booked into a private club, Le Club Mondial, formerly a men's only club, and much nicer than my hotel. I waited until he got the keys to his room - actually a suite - and I could see that it cost three and a half times what I was paying for my small room a few blocks away. As the uniformed desk clerk handed him the key, he cleared his throat and said “Excuse, Professor Benterou. We have a tie for you, as the club rules state that you should wear a tie when you are in any of the public areas of the club. In fact we will give you this one which is ready to put on if you'd like.” He held out a red tie with navy and white stripes which had an Oxfordian old school look to it. “Allow me, Professor,” he said as he deftly tied it into a knotted noose with a large opening for a head.

Benterou looked at the clerk, then at his suitcase, started to say something, then shrugged and took the tie. He placed it with one hand loosely over his head, then when the desk clerk leaned forward to help him tighten it he glared at him and put down his briefcase and slid the knot up to pull his wrinkled collar together.

Dr. Moriarty asked me to make sure he had everything he needed for his comfort and his talk the next day, and to confirm that he knew he had to be at the opening ceremony that was taking place that evening, so I asked him about that before heading back to my car.

“I could use a glass of scotch and your company for some inspiration before preparing my talk. Come with me to the lounge and tell me what you’re working on.” Hardly able to believe my good fortune to be asked to act as a muse for a veritable genius, I mumbled “Of course” and followed him in to the wood-paneled bar.

The lounge was all old marble, brass, and wood, with surfaces worn down from a century and a half of polishing. Benterou chuckled “I stay here because they have the best single malt scotch this side of the Atlantic. Spent a few years in England after the war and acquired a taste for the good stuff.” I excused myself to phone Dr. Moriarty; when I retrieved my cell phone from the bottom of my bag, a porter silently rushed to my side.

“I am sorry Madam, there are no cell phones allowed in the public areas. You are welcome to use the porter’s telephone to make a local call or you may step outside to make your call on your phone.” I stepped out front, since my cell phone was the only place I had stored the number.

Since the pupil-advisor tie is one that never loosens much and never unbinds you completely from the brain that helped train yours, I had no choice but to make the call. When I explained to my former advisor where we were and that Benterou was in the lounge ordering scotch, she first swore, not particularly unusual for her, and I didn’t know what was coming next. “You have to stay with him then,” she said. It’s four thirty. At six thirty he has to be standing at a podium, dressed in a clean suit, as sober as you can get him. Look, he doesn’t have to say much of anything; his big talk isn’t for another few days. He just has to be here. Can you manage or should I come over and help? Don’t let that ass get you so drunk you can’t drive! Don’t get drunk at all!” I assured her it was all under control and hung up. I then returned to the oversized carved wooden and leaded glass door, rang the doorbell, and waited to be readmitted.

I reentered the bar and found on our table a crystal pitcher of water, two heavy tumblers, a small bowl of ice and two small shot glasses of

honey colored scotch whiskey redolent with a sweet smoky fragrance. Benterou was leaning over one of the small glasses, his nose almost in the cup.

“Eh bon, you have returned. Let us drink to some lovely days to come in your nation’s capital.” He picked up the bowl of ice and waved it around until a waiter took it away. He decanted my small glass into the tumbler and topped it off with an equal amount of water. “I think you ladies prefer the whiskey like this, but one must never never put in any ice. It is one of the worst aspects of American culture, this obsession with ice.”

He sipped noisily and appreciatively from his own small glass not bothering to empty it into the crystal tumbler.

“Tell me my dear, are you familiar with any of my work?”

I told him what I had read and that I also studied work of the French and American schools of geometry that followed his groundbreaking publication in the late 50’s. He seemed satisfied by this and began to highlight the precise history of the results in a detailed anecdotal way. I felt as if I were sitting with George Washington who was saying “Let me tell you some details of my encampment at Valley Forge” and then regaling me with stories of how the supplies and ammunition were procured at the last minute. I sat riveted.

Suddenly he said “But I am a conversation pig, rather cochon, or do you say hog? Yes, I am a conversation hog. Tell me what you have done.” I outlined the statement of the main results obtained for my Ph.D. thesis work, and his reaction alternated between pretending he didn’t believe my statements could be true with saying my theorems were trivial. Before I could get a single detail of any of the proofs off my lips he held his hand up to stop me.

“You mentioned the Potter metrics, but it is important to know the complete history of this work. Oh there were terrible thieves among mathematicians in those early days. I don’t say this to too many people, but that salaud Potter from Michigan stole my idea for his paper, and then got a job at Princeton based on his Potter metrics. Ha. Potter metrics are nothing but Benterou metrics with new notation but we hear almost nothing of Benterou metrics do we? This is because there were exactly two papers using the terminology Benterou metrics before Daniel Potter had three of his students change the terminology to Potter metrics after he added the most trivial and obvious extra condition to my definition. Once those papers were published there was no turning back; Benterou metrics were essentially dead! My dear, this is a terribly competitive area of mathematics to be in and if it is not too late I caution you to think hard before continuing. Someone

as young and beautiful as you can do many things with your life. Me, I am an old man. I just have to live with these robbers taking my ideas and publishing them as their own.” He signalled to the waiter to bring two more glasses of whiskey. Beads of perspiration glistened on his wrinkled forehead and his face sagged like a tragedy mask.

“I will tell you that Daniel Potter was in my office romancing my second wife Odette during the summer of 1963. He would have stolen her too if I had not come upon them sooner than they expected. Can you imagine? He came to Paris to steal my ideas and then tried to steal my Odette and my ideas. Of course I was about to divorce her anyway, but since she was going to go with Potter I kept the marriage going longer just to keep her from him. He chuckled and took a big gulp of whiskey. “In the end he married several times, first a student of Hataki and then his own student. Ha, but not my Odette.”

“Be careful. Potter will pretend to be your friend, but he is not a true friend. When we were at the International congress in Beijing three years ago we were seated next to each other at a banquet. The platter of the most delicate moo shoo pork you have ever seen was heading down the table towards me. People were raving about the delicacy of the pancakes, the sweetness of the oyster sauce, the soft pink of the pork cooked just to the legal temperature, and this is the Chinese legal temperature. I could see it and smell it, and Potter sat between me and my happiness. The platter was emptying out and I stared and stared at it. Suddenly there it was next to me and I was salivating for this precious dish; there was so little left yet there it was. Potter snatched it up and cleaned the platter onto his plate. I have not spoken to him since. I hate him.”

I stared at him silently wondering how to respond when my phone vibrated. I surreptitiously glanced at it, saw it was Dr. Moriarty, saw also the time illuminated on the phone and leapt up. Since I was not allowed to use my phone inside, I closed it quickly and turned it off.

With repeated apologies I stood up and announced that we were due at the conference hall in twenty minutes. We had not a minute to spare so while Benterou used the restroom I summoned the waiter. I asked him to put the drinks and the necktie on Professor Benterou’s tab and to call us a taxi to take us the mile and a half down the road and that I would retrieve my car later. We arrived with five minutes to spare and my advisor rushed up to us, greeting me quickly with a mixture of relief and annoyance.

“I hope you at least had a chance to tell him what we are working on”, she said. Without waiting for my answer she rushed to his side where a small crowd of admirers gathered round his squat body while

his pink cheeks, flushed from the whiskey, contrasted with the feathery halo of hair. I sat down towards the back of the lecture hall with a group of friends to wait for the honors to commence.

After a flowery announcement about Professor Benterou's accomplishments, followed by announcements regarding the scheduled events, Benterou himself was asked to say a few words. He walked a bit unsteadily to the podium, his white hair undulating in wavy tufts as he climbed the stairs to the stage. His cheeks shone pink under the stage light, his smile looked devilish under the lights. As he stood to give his impromptu greeting, he began by saying "I first want to thank my dear friends and conference organizers Bree Moriarty and Daniel Potter for this wonderful honor and for their excellent hospitality, not just by this special conference about to begin, but for so many years of entertaining soirees both mathematical and otherwise."

Professor Philippe Benterou spent the next three days basking in the limelight, his round elfish countenance bobbing up and down in the audience while talks relating to his work buzzed around the convention center. I attended as many of the formal talks as I could absorb, but also spent long hours in DC microbreweries chatting about math and math jobs with my friends. His own talk was considered to be brilliant, though I had a hard time reading his tiny smeared handwriting applied to a transparency as he talked. The notes I half heartedly jotted down at the time have convinced me over the years that he did say something innovative that day that I just failed to grasp then. Benterou never talked to me again nor I to him; he died two years later alone in his Paris apartment after a sudden heart attack. But I still revere his body of mathematics and that of his students who followed him. After all he is my mathematical grandfather.

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