

# Stories about Gerry Brown

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## **1 Part written as a section in a book devoted to Gerry Brown 80th birthday.**

Having daily lunch discussions in our common room for about twenty years, dominated by Gerry Brown, I heard his favorite stories about people he met in his life more than once. As he repeatedly told us (and also wrote in his memoirs), his life path has been deeply affected by three “eagles, with whom he tried to “fly”: Gregory Breit, Rudolf Peierls and Hans Bethe. His attitude toward them goes well beyond the normal gratitude of a student towards his teachers, as Gerry very well realized that the main thing he learned from them were not some scientific ideas, or special facts or tools, but the attitude. Indeed, if he had not met them, he would be quite a different person. Gerry never forgot the life story of his father, who had certain math talent, but due to lack of connections and some unfortunate turn of events was discouraged to pursue research and settled for teaching math in small South Dakota college.

From what I have learned, his relations with Breit were not warm or very personal, but it was very different with two others. Gerry lived in the Peierls house for a long time, run by the strong hand of Peierls’ wife Eugenia (Genya). From his stories it looked like she extended her maternal instincts beyond her immediate family and took care of the affairs of the entire Peierls group of postdocs and students, from their basic needs (like a roof under their head) to even their personal lives.

I was not a witness of his time in UK, of course, but still I think retelling one story, from Gerry’s own words, may be instructive. Gerry does not use or like any gadgets (other than his beloved 10-dollar worth calculator) or computers, as he was a master of how to organize the right calculation whenever needed. And yet, during his Peierls days, when he badly needed certain atomic theory integrals be numerically calculated, he managed to do it, in a curious way. He said he hitchhiked or took bus to Cambridge, where he knew he could use their first lamp computer on weekends. It was so, Gerry recalled, because that machine was very unreliable and full of bad electrical contacts, so any calculation

could only proceed if little kicks were applied periodically, and sometimes he and his friends had to hold certain pieces by hand to keep it going.

His relation with Bethe was extremely intense, right till Hans' death in 2005: in fact Gerry spoke with him for the last time on the morning of that very day. Nearly daily we could see faxes from Bethe to Gerry on our fax machine, full of formulae with frightening 4 or 5 digit page numbers. I recall once taking one of them to Gerry: he pointed out some vertical line in the middle of the page which made no relation to the text: "see", he said, "Hans fall asleep here."

I witnessed it from a distance, of course, starting from 1993. In that year I was one of the organizers of Santa Barbara program, while Gerry went to his usual winter retreat with Bethe in Caltech: and I visited them there. Here is how it worked: Gerry was in charge of practical things like cooking (their wives later were also going with them, but not on earlier years of their collaboration when they wanted to get away from everything and focus on science). After breakfast he was picking up a problem and provided empirical information when needed; in the days before the internet made it easier Gerry's art of navigating in the library and getting the relevant facts was a great help. (As an aside, let me point out here that Gerry was one of the organizers of Physics Reports, today a journal with about the highest impact factor, as he always highly valued a subfield being cleverly summarized.) Then they thought about it separately till lunch, after which they discussed the results. Hans, the great problem solver as he was, often was able to give a complete solution.

One story had especially impressed Gerry so that he told it again and again. At one of their early meeting, in Copenhagen, Gerry proposed to discuss the famous supernova problem. The prevailing idea was that when matter implodes and density grows, nuclei are decomposed into nucleons. Bethe, being presented with it in the morning by Gerry, in the evening told Gerry, in his straightforward style that "... they are all wrong... because the entropy is too low." And sure enough, Hans was right. The point of the story is that in a few hours (or less) Hans had overthrown years of other people's work, and he did so by just one simple thought based on a general principle, the entropy conservation. This shows what, among other qualities Gerry valued in his "eagles", the main one still was the simple fact that all three were exceptionally clever.

On a lighter note, I cannot resist relating a funny episode of that 1993 meeting. The phone rang and Gerry answered it. The call was from the Russian embassy: Gerry passed phone to me, as the Russian speaking person in the room. The embassy however simply wanted to know if Bethe was there, since they had to forward a letter to him from Yeltsin (then Russian president). I confirmed that and they hung up. Gerry asked: "Hans, why does President Yeltsin write to you?" Bethe said: "Well, it must be a reply to my letter". "And what did you write to him about?" inquired Gerry. "One evening I had nothing else to think about and I thought about how one can solve the economic problems of Russia, and I wrote to him what my suggestions were." I said: "See Gerry, the problems you keep providing are apparently not hard enough". Everybody laughed. Yet Bethe did not tell us about his economic suggestions, steering the conversation back to the physics subjects we discussed. (Later,

however, he told Gerry that his idea was to back currency by parcels of state land, an idea he perhaps recalled from the time of Weimar Republic, when he was a young boy.)

Gerry values highly phenomenologists who can look at some apparently unrelated empirical facts and then draw out important consequences from it, by pure deduction. In fact, he has some Sherlock-Holmes-type abilities himself. Let me give an example outside science: Once on a weekend during the conference at Tennessee we went hiking in the mountains for few hours. Going downhill in a big group was too slow for Ismail Zahed, who just ran down ahead of the others. When we found him waiting for us at the bottom, he said: "Look, I just met a deer." "Perhaps at the right turn near the small brook?" asked Gerry. "How do you know?" asked Ismail, with surprise. "Well, there were fresh deer droppings there, which looked larger than usual. Had you frightened the deer?" "Yes indeed", confirmed Ismail.

Needless to say, Gerry helped me a lot, especially during our settling in at Stony Brook. But soon I learned that Gerry also practiced random acts of kindness to people he just met. A typical story: spotting a student who seemed to be in distress in the corridor, he learned he flunked the comprehensive exam. (To make it a bit clearer: this student was not from our group at all, most likely Gerry had just met him for the first time, as he was not teaching large courses.) Many people would be satisfied by the explanation, but not Gerry: he wanted to know why he thought he flunked. It turned out student's wife (back in Europe) told him she decided to leave him a couple days before. Gerry did not say a word, he just went down to the Physics Office to find out how to organize an additional oral exam for him, which saved him from expulsion.

Let me end this memoir section with some comments on how Gerry works. At lunches he often presented certain facts, and then asked us to guess their explanations, usually providing rather provocative ones of his own to get the discussion going. The audience happily jumped on the occasion to disprove them, criticizing from every possible angle: it was precisely what Gerry wanted. "You take a position in the argument," he was instructing us, "and then let them shoot at you". This trick was very effective in getting other people become involved in problems he was interested in.

Gerry knows very well how important it is to attract the best students possible, and he is very good at that. In fact the number of Ph.Ds defended under him is unbelievably high, 72 according to his count, which may be some kind of a record. And, whatever they did later, many of them I met kept personal relationships with Gerry for decades.