

As Jean has had very few PhD students, many think his influence on other mathematicians, enormous as it is, has been largely through his work. Indeed, on top of all the ideas and techniques he introduced, simply getting through even one of Bourgain's articles can take one to a different level in math. However, in addition to the super-human impact of his math, there is also another, less direct but very human, dimension to his impact.

For who is a true mentor? This is a person whose role in your life does not end with your receiving a PhD diploma or even the approval of tenure, and may even only start then. Mentors are people who influence us the most, not just through their work but also through their combination of high standards and targeted support, shaping what we work on and how we work on it. A true mentor treats you as if you are a better mathematician than you are, and then you actually become that better mathematician. Somebody, whose "this doesn't look entirely trivial" may mean more to you emotionally than an Annals acceptance. In all these ways, Jean has been a great mentor to many, often without them or even Jean himself realizing it.

My first encounter with Jean happened in late 1994, when he, a freshly awarded Fields medalist, visited UCI along with Mei-Chu and little Eric, a precocious bubbly 2-year-old. I remember being struck by how the matter of most pride for Jean was clearly Eric, and not anything else. Yet he left time for math discussions, and people signed up for brief meetings with him. Definitely not me though: a recently hired assistant professor, who started out at UCI as a part-time lecturer, I felt like the lowest person in the department who had no business trying to meet with famous visitors. It was all the more a true Cinderella moment, when Jean suddenly requested to meet with me: he had seen my paper, to appear in CMP, and wanted to know more detail. We talked for maybe 15-20 minutes, and had no further contact for the next five years. In the meantime, my UCI colleagues asked Jean to support my Sloan application the following fall, after which he also supported my promotions and likely other things that I don't even know of. So generously supporting a person one has hardly met, based essentially on one paper, is highly unusual, especially if the paper in question is not obviously prominent. Yet it was typical for Jean.

Moreover, unbeknownst to either of us, our 1994 encounter was the start of his lifelong role as my mentor. The sole fact that he liked the CMP paper encouraged me to keep developing the same direction. I eventually figured out the last piece of the puzzle which led to solution of a problem that has brought me numerous recognitions. However, the biggest importance of this result for me is in Jean's saying that it had influenced his work and inspired him to enter the field of ergodic operators. His involvement has since been transformative for the field: it has revolutionized it, opened new vistas, and made it a lot more compelling for others. For me, it also marked the start of our collaboration and communication.

In the beginning, we talked very little about the papers we published together. Our first paper resulted from a five minute discussion, literally on a napkin. It was as if we both knew something that felt worthwhile to write up and were amazingly on exactly the same page. In less than two weeks, as I was preparing to start working out the details, Elly Gustafsson sent me the ready pdf, and Jean apologized for the rush explaining that he promised something to Milman and this came handy. Our second paper originated from an even shorter conversation, without even a napkin to aid. After Jean's lectures at UCI, he invited some of the participants to join his family on a fishing trip departing from the nearby Newport Beach. Despite Jean's bragging about huge yellowtails he was regularly scoring on similar trips, the total catch for the group that day was a single small but very spiky rockfish that my daughter then insisted on setting free. Jean still looked happy: he clearly was there for the experience. For me it was the opposite: I spent all four hours suffering from severe sea-sickness, exacerbated by the realization that I was wasting such a perfect opportunity to talk with Jean. I was able to collect my strength only when the boat almost returned to the dock, and we talked a few minutes, again agreeing on something that could also be done. This time I insisted on writing it myself. Five months later, I finally sent Jean a draft, admitting that I had to settle for a result not as good as envisioned in our fishing trip discussion because I was stuck on not being able to remove an unnecessary technical condition. To this Jean immediately replied with "let me have a look", and by 1am the next morning sent me a lemma that took care of the issue. Once the paper was ready, he said he promised it to DCDS. I then cautiously asked whether we could try Acta or Inventiones instead. He said "That is OK with me if that's what you prefer. I told the DCDS guy he would get it within a week, but I could send him something else then." Our third paper, that later proved very fundamental and influential, was also promised, this time to JSP. Jean was very generous to journals, and often published well below

where he could, which is especially true about his solo papers.

Our discussions gradually grew deeper and were not generally tied to our joint work. Jean had a remarkable ability to lift his conversation partner up, and subtly encourage them. Almost every contact with him left a profound and lasting effect on my confidence. I am not as fast as many, and was very self-conscious about that, when I was younger. This had made me especially nervous when communicating with some senior people; I often felt almost as if I was turning stupid in their presence. With Jean, the effect was miraculously the opposite. From that very first encounter in 1994, it was always easy for me to talk to him, as if his subtle encouragement has been making me instantaneously smarter. My best real-time mathematical triumph happened when I found a simple counterexample to discrete unique continuation right during Jean's talk where he claimed he didn't know if it was true or not. Jean may have thought I was always like that. Little did he know it was exclusively in his presence! In general, my growing communication with him was a big matter of my internal pride, something that encouraged me almost more than anything else.

Incidentally, Jean admired those who were fast, but would say that he himself was slow. "IMO problems? Give me a week, I can solve them. But in four hours? Forget it! I have no idea how these people do it." This is from someone who only needed a few hours to produce a lemma that I had been stuck on for several months. My attempts to express my admiration of the latter fact would be met with "When you've been in this business for as long as I did, you know a trick or two". .

In August 2001, during a long connection to a flight to Rio at the Miami airport, I heard from a loudspeaker: "Jean Bourgain, your party is waiting at Gate B37". Naturally, I went there and met Mei-Chu and Eric who were already getting nervous. Some more time has passed until Jean arrived, with a big smile (my thought was: "he just proved a theorem!") and calmly informed Mei-Chu that he forgot his medicine in the checked luggage. Apparently this problem can also be solved, and the medicine was retrieved. I was struck by how calm Jean was, completely undisturbed by his misadventures. We happened to be on the same overnight flight, which was not that much of a coincidence since we were both traveling to the same conference. As far as I can tell, the entire night Jean was reading papers. He had a big pile on his tray table, and was making notes on the margins. When we arrived to Rio the next morning, I asked Jean what he was reading. "Oh, just some refereeing". This is another thing about Jean: he was a remarkable citizen of the community. He knew everything that was going on in analysis, took his leadership very seriously, and was an enormous asset to journal editors and others seeking an unbiased input. He would also read and appreciate the papers of others, independently of refereeing, something few of us do. In the last few years, confined in Belgium for medical treatment, he would watch videos of presentations from all the interesting meetings. I heard of others calling Jean competitive, but it is not something I ever observed. He was interested not in himself in math, but in math in itself, and greatly supported others who produced good math.

My last in-person meeting with Jean was in December 2015, when I visited him for a day in Princeton, and we started a new collaboration. He was in the middle of a devastating illness, but was very happy: math was going well. Indeed, the Vinogradov's conjecture paper was recently finished, and he was full of other plans and ideas. His optimism was inspirational. Later, even when things got really bad healthwise, he still projected strength, humor, and kindness in every conversation. It was overwhelming for me to learn a few weeks ago that the nomination for the prize I got recently was initiated by Jean in 2017, when "treatments", as he called them, left him with precious little time to enjoy what he loved. His selflessness was unreal.

Jean's support, influence, and mentorship have fundamentally changed my life, and they persist to this day in many different forms. I keep learning from and being influenced by his ideas as well as measuring my work by thinking of how he would have reacted. I try to emulate his ways when dealing with young unconfident people around me. His memory inspires me to try to be both a better mathematician and a better person. And I am just one of many people for whom Jean was a true mentor.