

100 years of Jacques Dixmier

Alain Connes

On Sunday, 26 May 2024, we celebrated Jacques Dixmier's 100th birthday with an intimate dinner at his home, in the small flat he has occupied for many years at 11 bis rue du Val-de-Grâce in Paris.

Preparations for this event were based on discussions with Jacques, in particular to draw up the guest list, which was limited to eight guests due to the small size of his flat. Among his students, Jacques chose to invite Claire Anantharaman-Delaroche, Michel Duflo, and me. Another distinguished guest, who was particularly dear to Jacques, was Jean-Pierre Serre, who responded immediately to our invitation and traveled all the way from Switzerland, where he now lives.

In connection with Jacques' literary activities, we also invited Odile Jacob, her husband Bernard Gottlieb, and my wife Danye Chéreau; Jacques wrote two novels with Danye and me, which Odile published.

Several interesting episodes quickly led to lively discussion, which remained general throughout the meal.

One of the highlights was when everyone was invited to share an anecdote linked to their childhood. Jacques' story was that he remembered going for a walk with his parents when he was being unruly. His father had reprimanded him, advising him to behave like the little boy who walked in front of them as a family, exemplary in his discipline. Jacques complied, but shortly afterward, the model boy himself started to get into mischief. Jacques' reaction at that moment was not to rejoice that the other child was not such a good example, but to feel ashamed for his own father. This memory is indeed a perfect illustration of one of the facets of Jacques's personality.

This anecdote prompted the other guests to share their own childhood memories. Jean-Pierre Serre, for example, recalled that at the age of two he used to crawl under a chest of drawers. One day, when he stood up suddenly, he hit his head on the piece of furniture and, in a fit of childish anger, insulted the chest of drawers as if it were a person. I did not dare suggest that he'd acquired "la bosse des maths" on that occasion.¹

Another highlight of the evening was when Bernard Gottlieb recalled the example of one of his fellow students, who was admitted to the École normale supérieure (ENS) with a higher score than Poincaré, while expressing surprise that this individual then devoted his life to finance. Serre, with his incisive wit, asked him this question: "At what point did he realize that he was not a mathematician?," thus underlining the fundamental difference between success in a prestigious competitive examination and a true vocation for mathematical research. This comment gave me the opportunity to read a captivating text by Jacques on the nature of the mathematician's work and the specificities of research.

In search of a theorem

While traveling, I came across a very ancient city. Legend has it that a temple stands at its center, a temple that is splendid in its architecture, its decorations, and, what is more, the spiritual energy that emanates from it. Nobody in living memory has visited this temple (it is a divine residence), but I am willing to give it a try.

To be honest, it may not have been a legend that alerted me, but a dream. A dream so convincing that I am convinced this temple exists.

As I said, the city is very old. A mysterious silence reigns here. The streets are narrow and dark. It is not easy to get to the center, so I make my way slowly through the meandering streets. There are probably several routes, but I am not looking for the shortest; I will be quite happy if I find one.

The task is proving more difficult than expected, as the winding streets are full of dead ends. So, I often had to turn back.

In the long run, I get a bit discouraged. I have dark thoughts. Perhaps this labyrinth was once built by a genius who wanted to play tricks on future visitors, a genius so evil that all the streets around the center would be blocked off. In my worst moments

¹ A French expression meaning "a natural knack for mathematics." The word "bosse" literally means a bump, like one you might get from a physical impact. The expression playfully suggests that someone's

talent in math might be as if they've developed a "bump" for it, as if from a knock on the head. It is used to describe someone with an innate mathematical gift.

of discouragement, I sometimes even consider... that there is no temple.

No! It cannot be! The temple does exist, and there's a way in. My moment of depression is receding. My observations and calculations lead me to believe that, overall, I am closer to my goal.

A vague urban plan takes shape: avenues and squares. The ancient architect was not a hostile demon.

But obstacles of another kind arise; messages from the outside world reach me, demanding my presence, sometimes insistently.

Today, I have recorded my successes and setbacks in a manuscript. What does the future hold for me?

Suddenly, the scenery changes. I am no longer in the heart of a city, but in the heart of a virgin forest. It is night. I catch a fleeting glimpse of a flickering light, probably far away. I need to reach that light.

It is vital!

This was followed by a lively discussion on the concept of "great mathematician" between Jacques Dixmier and Jean-Pierre Serre. Jacques defended the pragmatic idea that eighty percent of mathematicians would easily agree on a list of "great mathematicians," provided one restricts to mathematics that are at least 50 years old. And this without defining precise criteria. Serre, for his part, insisted on the impossibility of defining such criteria. He gave the example of Grothendieck and Ramanujan, two undeniably important figures of the 20th-century mathematics, but who have nothing in common. In the end, the participants agreed on the idea that the community of mathematicians is not a totally ordered set in terms of mathematical value, but rather a partially ordered one.

Serre went on to explain that you do not do mathematics for fame, but simply for the overriding need to understand and that it is impossible to give up research altogether. Jacques is a perfect example of this, since he resumed his research activities two years ago, after a twenty-year hiatus, in response to a question he had asked me, on which we published a collaborative article. For Jacques, the main motivation for doing mathematics is to participate in humanity's quest for knowledge.

The most memorable moment of the dinner came at the end, after the cake. We had been waiting for the champagne, but it finally appeared, as if by magic, in another form at just the right moment: Jacques, on his feet, blossoming, launched into a carefully prepared speech, to say a few particularly relevant and kind words to each of the guests. He spoke without the slightest note or hesitation and began by recounting with humility and precision the milestones in his life as a mathematician. From his secondary studies, the entrance exam to the ENS, to his recent discoveries, he recalled each phase where, thinking at first that he would not succeed, he had been surprised to do better than he thought he could. The audience listened with rapt attention, eager to prolong the moment.



Jacques Dixmier and Jean-Pierre Serre before the dinner.

He then went round the table, paying a personal tribute to each of the guests. To Michel Duflo, he recalled that Duflo's grandfather had been his literature teacher. Then he fondly recalled a memory linked to his scout leader, Duflo's mother, while mixing technical comments with praise for his pupil. For Claire Anantharaman-Delaroche, he evoked the reading of her thesis, described as 'Roman,' since he had read most of it in Rome during a trip. This charming detail was tinged with a benevolent seriousness, typical of Jacques, who used this serious tone to evoke memories shared with his former student.

The moment when he spoke about me was special, because I had taken the initiative by expressing the exceptional importance of my meeting with Jacques. I simply said that this meeting had been the long-awaited revelation of a mathematician who understood me perfectly.

One of Jacques' most touching tributes was to Jean-Pierre Serre. Jacques explained that Serre had never made him feel inferior at any time during their long relationship, particularly during their work together in the Bourbaki group.

For Odile Jacob, Jacques had written a poem about the inauguration of the publishing house's new premises, located in the building long occupied by the family of André and Simone Weil. This text, imbued with emotion and gratitude, will serve as the final point in the account of this unforgettable evening.

To Odile Jacob

Your gracious visit, O dear Odile,
Your wondrous tales, your words so agile,
On this day, to my great delight,
Enlightened my humble room so bright.

With charm, you spoke of the grand hall,
Where now your plans and dreams will all
Flourish and grow in that noble space,
Once Weil's retreat, touched by his grace.

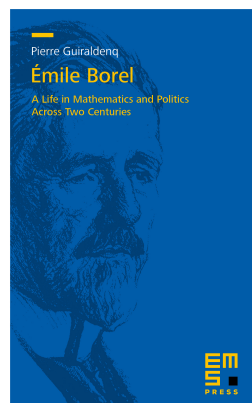
A vast amphitheater you now prepare,
A temple like Delphi, with grandeur rare,
Where the world's elite shall take the stage,
To share their wisdom, age to age.

And in this hallowed place, I see,
A frieze, or better yet, a grand tapestry,
That immortalizes, for all to view,
Your crowning as the Muse of Books so true.

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