

My dynamics courses at Orsay and Jean-Christophe

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In 1969 I arrived in Paris a fairly fresh (1967) Ph.D. from Berkeley with hair down the middle of my back and an irreverent attitude. I gave a course in dynamics the spring semester of 1970 at Orsay. My French wasn't very good and I worked very hard both on the mathematics and my grammar. Somehow grammar wasn't good enough. There was something about the style of my mathematics that made it unclear in French. I had a good audience. Smale's work on smooth dynamical systems and the omega stability theorem was recent and my work with Hirsch and Pugh on invariant manifolds and normally hyperbolic laminations was unfolding.

Henri Cartan came to my lectures. He was remarkably tolerant. As irreverent as I was, he was always friendly. One day I stated a theorem something like: *F aura one section invariant si: ...* and there followed a list of hypotheses. Cartan asked me where are my hypotheses and where my conclusions. It was not the first time. I lost my cool and responded something like: *Have you ever seen hypotheses in the future tense?* Cartan sat in the middle of the room. The students between him and me actually crouched down in their chairs. I think they were expecting lightning bolts. Well as I said, Cartan was very tolerant and it all passed very well.

But when I came back to Paris again in 1976 to give another course at Orsay, I decided to write my lectures out in English and have them translated to

French to hand out at the lectures. Rémi Langevin undertook the task. Albert Fathi soon joined in. The task expanded quite a bit beyond translation. The result was the Astérisque volume "Stabilité Globale des Systèmes Dynamiques". In the end some chapters were written directly in French, and at the very end I ran out of steam. Jean-Christophe, who was a student at the time, wrote the chapter on Markov partitions based on class notes by M. Lebasque. The task was not easy. The proofs in the literature were very technical for the existence of Markov partitions and the rationality of the zeta function. Jean-Christophe produced a very clear, well-written chapter and even extended some of the results. I was and remain very impressed. I was glad to see as Jean-Christophe's career evolved that learning about Markov partitions did him no harm.

I remember Jean-Christophe as this incredibly friendly relaxed young man with such good English and so much talent for mathematics. Over the years we had many friendly interactions with the occasional insight into dynamics.

It may be an interesting footnote that when the English version of the book was being prepared I wrote to Rémi and asked if he had my original notes in English. He said he had thrown them out. So the English original was translated to French and then back to English by Joe Christy.



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