Lars Hörmander—some early memories

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Lars Hörmander was appointed professor at Stockholm University College effective January 1, 1957, not yet 26 years old. I started my studies there in the fall of 1957, and soon became aware of his existence. The student newspaper *Gaudeamus* published a report from the installation ceremony with the heading "26-year-old mathematics machine solemnly installed."

During my first years I had no contact with Hörmander, but I had several teachers who were students of him: Benny Brodda, Vidar Thomée, Göran Björck, Stephan Schwarz and Lars Nystedt. In October 1960 I talked with Olof Hanner about a possible continuation of my studies, and I mentioned that I would like to have Lars Hörmander as my advisor. Olof was not surprised; he just remarked that the reputation of his young colleague had spread efficiently.

Lars was always available for consultations. One knocked at his door—he could answer any question immediately. I never experienced any difficulty in talking mathematics with him. Most often he was typing articles or chapters of his book, the one which was to appear in 1963. The clattering was intense. He also typed lecture notes, which were mimeographed using the technology of the time.

When I left his office the clattering resumed after zero seconds.

Lars lectured on partial differential equations during the academic year 1961-1962. These lectures foreshadowed the Springer book that came out in 1963. We, his students, read the manuscript and commented on it. I wrote a Licentiate Thesis on a problem proposed by him concerning approximation of solutions to partial differential equations with constant coefficients.

During the academic year 1962-1963, Lars gave a series of lectures on analysis in several complex variables. In this way he started the creation of his book that came out at Van Nostrand in 1966 and which is now one of the most quoted in the area. The organization of the lectures was exactly the one we now see in the book. Holomorphic functions were considered as solutions to differential equations, which was then a new approach for me, and which gave powerful constructions methods and made generalizations possible. It was a great experience to witness the birth of this book.

During the Fall Semester of 1963, Lars gave a series of seminars on convex and subharmonic functions—more than thirty years later, in 1994, he published his book *Notions of convexity*, which takes up these topics with a unified treatment of convex, subharmonic, and plurisubharmonic functions.

Most important were three seminars on L^2-methods for the $\bar\partial$ operator, which he gave in the fall of 1963. The results then appeared in *Acta Mathematica* in 1965, in a groundbreaking article.

In 1964 Lars left Stockholm for Stanford and Princeton. He visited Stockholm in May 1965 and gave four lectures on pseudodifferential operators, an area that was then rather new.

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Robert Oppenheimer offered me a membership in the Institute for Advanced Study in Princeton, NJ, for the academic year 1965-1966. Lars was there then, and of course it was he who had arranged everything for me.

It became a most valuable year in every respect, both mathematically and culturally. I was there with my wife Astrid and our son Dan, who turned two during the fall. We arrived early, already on one of the first days in July, while Lars and Viveka were in Sweden. They let us stay in their house during the summer. As a small service in return, we took care of their dog Shilly-Shally.

Lars gave a series of lectures at the institute with the title "Pseudo-differential operators and boundary problems." This was an elaboration and extension of the lectures he had given at Stockholm University in May 1965.

Furthermore Lars gave a seminar within the framework of the *Current Literature Seminar* on "The Lefschetz fixed point formula for elliptic complexes."

I was in constant contact with Lars during that year and wrote a paper on the growth of entire functions and on analytic functionals. Another valuable contact was Miguel Herrera (1938–1984), with whom I studied residue theory.

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After that year, I had many contacts with Lars, concerning complex convexity and fundamental solutions as well as many other topics, especially after his return to Lund in 1968. I was the faculty opponent when his students Arne Enqvist and Ragnar Sigurðsson presented their PhD theses. On the last day of 2010, he sent me a new, strong theorem on the regularity of fundamental solutions, an excellent addition to the results in his four-volume book.

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Nobody has been so important for my intellectual and scientific development as Lars.