

SPRINGER, TEACHER AND COLLEAGUE

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I first met Springer when I was a freshman or sophomore. In those days Leiden University, although a "Praesidium Libertatis" or a Bulwark of Freedom, was still a pretty stuffy institution. But the Math Department was moving with the times and announced an exercise session to go with the calculus course. As a young assistant professor, Springer was put in charge. Not terribly exciting. He dutifully computed integrals on the blackboard. But already I sensed a kind of aloofness. While perfectly aware of his surroundings, the mathematics seemed to captivate him. This intensity of concentration of course survived beginning calculus. During all his mathematical life, in my perception, this remained a marked feature of Professor Springer's dealing with the subject.

During my student years we got to know each other, but not well. He was quite a bit older and already a gifted research mathematician, while I was trying to learn some basic facts and skills. Moreover after a few years he accepted a position at Utrecht University where he remained ever since. Though of course interspersed with numerous visits of shorter or longer duration to many foreign centres.

When I joined the Utrecht Department quite some years later, this was led by Hans Freudenthal in mid career. He was an authoritative chairman, who knew full well what he wanted, but left most details to younger members of the staff. This made it a stimulating place to work for those coming from outside. Freudenthal had recently done important work on exceptional Lie groups and their geometries. Several staff members had taken their degrees with him and more or less continued working in this area.

But the new input came from Springer and the just a few years older Van der Blij, both full professors. They taught courses and also seminars, at first often together, later mostly alone. Advanced students, some working for a Ph.D., and junior staff attended these as a matter of course, and were introduced to new developments in mathematics. Some of us had spent years doing research in the States, others in France, we were encouraged to attend sessions of the Bourbaki seminar in Paris, the Arbeitstagung in Bonn or workshops at Oberwolfach. Springer in particular, actively invited foreign luminaries to visit Utrecht, for shorter or longer periods. Many of us in this way felt part of an international activity, which transcended concerns of our local group, and felt grateful for this.

Also Tonny Springer and his wife Tijnie sometimes invited members of the staff to dinner or a party, first at Maarn where they then lived and later closer to Utrecht in Zeist. These occasions often celebrated a visit by some foreign colleague, and widened our horizon. The Springer couple certainly deserve credit for their hospitality, it created cohesion in the Department.

As was natural, Springer became the teacher and thesis advisor of a steady flow of students. Their theses went in many directions, but mostly centered around algebraic groups, which was of course their advisor's main interest. Many of these former pupils became strong mathematicians in their own right, in the Netherlands or abroad. I'm sure they benefited greatly from Springer's wide knowledge and contacts, but he never gathered a flock of admiring disciples around him, he never built a "school". In the course of the years Springer also wrote a number of books or monographs on various subjects he had taught or which caught his long-term interest. Alone or with others. In short, it became increasingly clear that this Department housed a mathematician of international repute who, because of his excellent

memory, wide knowledge and insight, was willing and able to answer questions of other staff members and guide them to the literature.

Of course it was inevitable that he was also called upon to become chairman of the Department and to sit on many an advisory committee. I'm sure he took on these roles conscientiously, but I do not believe he relished them. He certainly had his opinions and expressed these, but did not insist or make a nuisance. In 1964 he was elected to the Royal Dutch Academy of Sciences before he even turned forty, an exceptional honour. Here too, he sometimes grumbled about this venerable body's policies, but was not very effective in influencing them.

One semester Springer taught a seminar on the Goresky-MacPherson theory of intersection homology and perversities, as interpreted by Deligne and others. In a weekly series of talks, he also amended this fascinating new approach. Many of our staff and Ph.D. students attended. I remember feeling aesthetic pleasure, how things fitted beautifully and surprisingly together. During one of these sessions, Hans Duistermaat, a distinguished analyst with geometric insight and a powerful mathematician, asked a question. "Take the real line, look at C -infinity functions on it satisfying some Lipschitz condition, intersect with ... and tell us what the intersection homology is" or something similar. Springer, who on occasion, only half in jest, used to remind us that his professorship was also in analysis, understood the question perfectly. But he could not answer it.

Hans did not return to the seminar in the weeks that followed. Somehow it pleases me that both these men, exceptionally gifted and successful, without a doubt appreciated one another immensely, but still operated differently. I enjoy the fact that we mathematicians are not all of the same ilk, and I hope this will remain so in the future.

In 1983 Springer was awarded the Royal Dutch Shell prize. That multinational oil company, in those days funded this distinction for excellent research, judged by a scientific panel. With intervals of several years it went to different fields in science, pure or more applied. In Springer's case the laudatio was spoken by the celebrated writer and essayist, Rudy Kousbroek, who as a young man had studied mathematics and philosophy. Now of course, at least in this country, research funding is severely curtailed for fundamental disciplines, while a lot of money is directed to projects with industry or IT-companies. Rather naively, the authorities are looking forward to serious financial gains in three years time or so: who cares for basic research.

Springer's sixtieth birthday was celebrated in 1986 by a high-profile but relaxed meeting at the university headquarters in the centre of Utrecht, right above ruins of the Roman castellum from which this town originated. Fourteen illustrious lecturers delivered talks ranging over several areas of interest to him. Many of these were excellent, and we four organizers edited them for the Springer Lecture Notes, no pun intended. The meeting was generally enjoyed, as were several activities surrounding it. Springer's ex-Ph.D students on this occasion presented him with an etching by a Russian artist, for his collection of graphic art. In later years he and his wife took to traveling, often following a mathematical invitation. From Canada they brought back little Eskimo sculptures, from several extended visits to Australia, art by the Aborigines. The Springers all their life were frequent concert go-ers. Classical music meant a lot to them, and perhaps helped them to get over a tragic event in their family.

After this festive week, and even after his retirement some five or six years later, Springer carried on much as before. He counseled Ph.D. students, was helpful to us colleagues and could grumble quietly about certain developments in university life that he disapproved of. But he was also invited for extended visits to far away

countries to collaborate with mathematicians there. With his wife he enjoyed touristic expeditions many a time, for instance to Australia and Indonesia. In 2003 he attended the talks and the ceremony in Oslo surrounding the awarding of the first Abel Prize, at the invitation of its nominee, Jean-Pierre Serre. Three years later, carrying lightly his eighty years of age, he gave an invited lecture in the section "Lie groups and Lie algebras" to the ICM at Madrid. At home, he continued to show an interest in his long-time colleagues. When I spent almost two months in hospital after a severe operation, and a month in a nursing home to recuperate, the Springers paid me several visits. This was encouraging, reassuring and much appreciated.

Slowly slowly Springer was affected by a common nerve disease. In his case this made certain movements hard for him, but it did not affect his mind, which remained sharp as ever. There are many ways one can ask a question during a lecture. One of my co-organizers of this meeting, Wilberd van der Kallen, used to turn up at a lecture course or seminar which I taught a few years after I joined the Department. Wilberd was a graduate student or perhaps a young Ph.D. then. When he looked up at the blackboard and spoke the usual formula: "I don't quite understand this", I knew right away that I'd made a serious mistake or omission. Hans Freudenthal in his later years had moved to math education and founded an Institute in another part of town. But he did regularly attend the weekly colloquium which he had started several decades ago. As older people do - I follow suit - he often dropped off to sleep during a long talk. Then he'd suddenly wake up, point at the blackboard and ask "What d'you mean by that?" and the speaker would be alarmed. Quite often he or she would have to admit that they had forgotten to impose a condition or had not explained properly. Springer was different. He staid awake and all there. He would mildly interrupt with "This result, could one also look at it another way and connect with ...". The lecturer would at first be puzzled but then would brighten up. "Yes, this is an interesting suggestion, there is a paper by so and so", or "it is worth looking into".

Until a few days before his death, Springer attended the colloquium, and usually dropped into one or two offices for a chat. More than twenty years ago, I fell into conversation with a man who told me he had studied mathematics at Utrecht. Currently he chaired a committee in the central administration of one of the Technical Universities. I asked him, whether from his studies he had learnt certain skills which were useful in this position. He thought for a moment and then answered: "No, not much. However I took courses from Professor Springer. Not that I always understood everything, but he is a real mathematician". Indeed he was, and a kind and considerate man as well. We sorely miss him.