

Klaus Peter Schwarz (1938–2012)

Helmut Moritz · Gérard Lachapelle

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1 Introduction

Klaus Peter (originally Klaus-Peter) Schwarz lived in an important time period for geodesy, and made great contributions to it. His unusual scientific career took place successively in two continents, in the countries of Germany and Austria (1967–1977), and then in Canada, since 1977. His activities in Europe and in North America were sufficiently distinct to merit separate consideration.

Therefore the obituary is written jointly by Helmut Moritz for the “European” period and Gérard Lachapelle for the “Canadian” period. His international activities are described jointly by both authors.

2 Europe (1938–1977) by Helmut Moritz

Klaus Peter Schwarz was born on February 1, 1938 in Königsberg, the city of the great philosopher Kant. Until 1945 Königsberg belonged to Germany; today it is an exclave of Russia called Kaliningrad. Klaus Peter’s unusually international thinking may unconsciously have been influenced by this fact. He just felt at home at any place in the western world.

In 1944 his family had to leave Königsberg and, under difficult circumstances, finally found a new home 1946 in Düsseldorf, Germany. In 1948–1957 he attended and

finished secondary school (“Gymnasium”) there. Then came a first unusual step: rather than going directly to the university, he first worked as a practical surveying apprentice, duly concluding with a final examination in 1959. Then he briefly worked as a surveying technician for the city of Düsseldorf, but in 1960 decided to begin to study Surveying and Geodesy at the University of Bonn, finishing regularly as a Diplom-Ingenieur in 1965. His main geodetic teacher was the well-known Professor Helmut Wolf.

The next unusual step, at least at that time, was to continue his study at the Graduate School at the University of New Brunswick in Fredericton, to get the degree of Master of Science in Engineering in 1967. (This was his first temporary contact with Canada, which finally was to become his permanent home.)

Immediately after that he wrote me whether I (H.M.) could offer him a position as my assistant at the Technical University of Berlin, where I was a professor of physical geodesy. His credentials were overwhelmingly excellent and absolutely unusual at that time, so I was greatly impressed and immediately agreed. It turned out that he was immensely practical and persistent in his calm way and knew exactly what he wanted. The first thing was a doctorate “Numerische Untersuchungen zur Schwerefortsetzung” (Numerical investigations on gravity continuation), which got the best grade.

He was a reliable, quiet and loyal co-worker, but from time to time he exhibited unconventional and original features which I found very interesting. I remember that I noticed that, without wishing to contradict me, he sometimes calmly affirmed the contrary of what I said. I reflected on this and usually found that his opinion was also true. This reminded me of a famous saying of the great atomic physicist and dialectic philosopher Niels Bohr: “The opposite of a trivial truth is falsehood. The opposite of a profound truth is another profound truth”. Klaus Peter just enjoyed to perplex me in this

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way by reversing my “profound truths”. This was perhaps my first experience in dialectic thinking, which I also greatly enjoyed.

When I got a new position as a Professor at the Technical University at Graz in 1971, he followed me quietly as a matter of fact, being satisfied with the lower Austrian salary.

Our first 5 years at Graz were perhaps the most peaceful period and most fruitful for me and my small team. Besides teaching, we had time for research, also within international cooperation. In 1973 we organized our first “International Summer School in the Mountains” on Mathematical Methods in Physical Geodesy, which took place in Ramsau, Austria, below the formidable Alpine massive of Dachstein. The best specialists, from all over the world, came as teachers and students. Among the teachers we had Antonio Marussi from Italy, Torben Krarup and Christian Tscherning from Denmark, and Erik Grafarend from Germany. Among the students there was also Gérard Lachapelle, who came from Canada via Finland, and stayed then to get the doctorate from the Technical University at Graz.

If I spoke of “peaceful period”, it means that we managed with a minimum of administration (which then gradually increased to its present immense level). Even Hans Sünkel, then a member of our group, called this period his most happy time scientifically, although in the last years, as Rector of the Graz Technical University, he was to become one of Austria’s greatest scientific administrative leaders.

I have mentioned this to characterize the scientific climate in which Klaus Peter Schwarz was working at Graz. Together we spent several research visits at the Geodetic Department of Ohio State University, where he may have become interested in the theory of gradiometry and inertial geodesy (my “Kinematical Geodesy” 1967), in which he later became “the” recognized pioneer in practical applications.

In 1975 Klaus Peter obtained his habilitation as Docent at TU Graz, with the work “Zonal harmonic coefficients from satellite data by collocation”. As I said, he always knew exactly what he wanted and he patiently and persistently followed his independent way. He had become one of the world’s leading experts in geodesy, and finally felt ready for a full professorship which he found in Canada, a wide open country of great opportunities and challenges. Austria was definitely too small and too conservative for him. In 1977 he moved to the University of New Brunswick in Fredericton.

Let us now continue with Gérard Lachapelle to describe Klaus Peter’s decades in Canada until and after his retirement in 2002.

3 Life in Canada (1977–2012) by Gérard Lachapelle

My first encounter with Klaus Peter was at the 1973 Ramsau Summer School, a defining moment in my academic stud-

ies and the beginning of our intertwined professional careers for 30 years. Klaus Peter, Hans and Helmut welcomed my request to go to Graz for my doctoral studies, which I started in January 1974. Klaus Peter’s knowledge of the Canadian academic system and his openness and hospitality were crucial in my decision to move to Graz, where I enjoyed two wonderful years of research, unforgettable hospitality and lifelong friendships. I was welcomed more than once by the Schwarz family in their Gratwein home.

By the time Klaus Peter moved to Canada in 1977, I was at the Geodetic Survey of Canada, conducting research in physical geodesy. Despite the long distance separating Ottawa from Fredericton, and the absence of the Internet in those days, we immediately started conducting research in mutual areas of interest.

Coincidentally, we moved to Calgary within six months of each other, Klaus Peter in late 1979 and me, in mid 1980. Klaus Peter was part of the founding team of faculty members who started the Division of Surveying Engineering, now the well-established and successful Department of Geomatics Engineering at the University of Calgary. In addition to teaching undergraduate courses in geodesy, Klaus Peter focused on quality research and on promoting and practising high standards for the emerging graduate program. He led by example and the sustained quality in master and doctoral studies that he instilled in us remains today.

Upon my arrival in the Calgary geomatics industry, I immediately began research activities in the area of GPS. Klaus Peter became interested in this field at the same time and we renewed our collaboration. Klaus Peter also became involved in a team of 12 experts who wrote and completed the first book on GPS in 1986, *Guide to GPS Positioning*. His research and formation of graduate students flourished, thanks to a unique combination of skills that included quality mentorship, encouragement, respect, and a high level of scientific expertise. When my wife Elizabeth Cannon, who had graduated from the undergraduate program in the early 1980s decided to go back to university for graduate studies, I immediately suggested that she approached Klaus Peter as her supervisor. This was another successful period, with Elizabeth completing her PhD in 1991, becoming a professor in the department the same year and president of the university in 2010. Soon after his arrival in the department, Klaus Peter organized the first International Symposium on Kinematic Systems in Geodesy, Geomatics and Navigation (later known as KIS symposia), an event that was remarkably successful and attracted experts from all over the world. This was followed by another five such symposia over a 20 years period. In the early 1980s, Klaus Peter foresaw the need to extend the collaboration of western geodesists with colleagues in China and successfully organized the Beijing International Summer School on Local Gravity Field Approximation in August 1984, a watershed in the area of international geodetic

collaboration. He assembled a team of western geodesists who lectured and interacted with Chinese colleagues for three weeks, a truly memorable experience for all participants that resulted in lifelong friendships.

When Ed Krakiwsky completed 10 years as head of the department in 1990, the natural successor was Klaus Peter. Being an academic administrator at any level is a well known constant challenge. Klaus Peter rose to this challenge and contributed much to further enhance the undergraduate and graduate standards in the department. His collegiality, calm and fair approach will always be remembered. His 5 years as head were busy ones due to his intense research activities, the supervision of many high quality graduate students and his involvement in the IAG. Klaus Peter vigorously pursued his research in gravimetry and integrated GPS-INS navigation during and after that period. He and his students were spectacularly successful in developing new scientific concepts and implementing them. Numerous industries benefitted and continue to benefit from the methods, algorithms and software that he and his team developed and licensed to them. He was justifiably proud of his team of researchers and the feeling was always mutual.

Klaus Peter maintained a healthy life style throughout his career. Canoeing and hiking in the Rockies with friends and family were favourite pastimes. His family was a source of pride. He was a highly spiritual man and accepted the illness that struck during the latter years of his life. Klaus Peter passed away peacefully. Many of us had an opportunity to say goodbye to him during his last days. We all miss him dearly.

4 International activities and awards

As we have seen above, Klaus Peter Schwarz has always been thinking in international terms, already beginning with getting his master's degree at the University of New Brunswick in 1967. During his work in Berlin and Graz he widened and deepened his international involvement, and he essentially

contributed to making Calgary an internationally recognized centre of excellence in geodesy: the term "Geomatics" in English originated from Calgary (it was a translation of "géomatique" which had been coined at Laval University in Québec 20 years before!) and was then well received internationally.

It is only natural that he made a prominent career in the International Association of Geodesy (IAG), culminating in being President of IAG during the term 1995–1999. His innovative and independent way of thinking had also been made him an ideal chairman of a reform committee ("Cassinis Committee") "to lead the somewhat traditionally-minded IAG into the third millennium" (Günter Seeber, http://www.ife.uni-hannover.de/fileadmin/institut/pdf/laudatio_schwarz.pdf); he was also instrumental in the two IAG symposia "Vistas for Geodesy in the New Millennium" (Birmingham 1999) and "Geodesy Beyond 2000" (Budapest 2001).

His merits were also recognized internationally in many other ways. Since 1994 he was an Honorary Professor at the University of Wuhan, China. One year later he was elected Corresponding Member of the German Geodetic Commission, and in 1997 became a Full Member of the Russian Academy of Navigation. His own University of Calgary honoured him by a special *Research Award* and, in 2004, by a *Distinguished Lifetime Leadership Award*.

Perhaps his greatest recognition came from his native country: The University of Hannover awarded him an *Honorary Doctorate* in 2006. (See the article by G. Seeber quoted above, to whom we are grateful for several details.) We also refer to the Obituary by Michael Sideris in the IAG Newsletter, January 2012, http://www.iag-aig.org/index.php?tpl=text&id_c=44&id_t=536

Klaus Peter Schwarz will be remembered as a great teacher, a great leader of research, and, above all, as a great and unique personality. He died peacefully on 20 January 2012.