Henri Cartan 1904–2008

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I met Henri Cartan for the first time in Oberwolfach in 1951. We met for the last time during the celebration of his 100th birthday in Paris 2004. I gave a lecture with the title "Henri Cartan: A great friend, mathematician, and European". I shall use the part of this talk that does not overlap Remmert's report.

On the occasion of Behnke's eightieth birthday on October 8, 1978, celebrated in Münster, Henri Cartan gave a beautiful dinner speech. We were all sad that Heinrich Behnke unexpectedly could not attend the dinner because of illness. He died one year later. Cartan's dinner speech was printed by Springer-Verlag under the title "Quelques souvenirs par Henri Cartan". In his speech Cartan recalled his first visit to Münster in 1931. Behnke, a young professor, then thirty-two years old, had decided to make Münster an active and interesting center for the young people around him. For this purpose he had invited a young French mathematician of twenty-six years having related interests who gave four lectures in German and one in French during his one-week visit. Cartan met Peter Thullen, and this was the beginning of a scientific cooperation and long-lasting friendship. Cartan reported also about his second visit to Münster in 1938. In the meantime the famous *Ergebnisse-Bericht* (Springer-Verlag) by Behnke and Thullen had appeared in 1934. Thullen had left Germany. The political atmosphere was depressing. There were not many students. But still mathematics went on. Behnke's assistant was Karl Stein, who had received his Ph.D. degree in 1936.

During the war, the friendship between Cartan and Behnke was not interrupted; Behnke, for example, received a mathematical letter from Oka in December 1940 and informed Cartan about it. In 1943 Cartan's brother Louis was deported to Germany. About this tragedy, Cartan says in "Quelques souvenirs" addressed to Behnke:

> "Je ne puis pas non plus oublier toutes les démarches que vous avez faites durant les années 1943 et 1944 (en vain, hélas) pour tenter de retrouver la trace de mon frère Louis, déporté en Allemagne au mois de février 1943, et qui ne devait jamais revenir. (I cannot forget, too, all the efforts you made during the years 1943 and 1944 (in vain, alas) to try to find any trace of my brother Louis, who was deported to Germany in the month of February 1943, and who never returned.)"

Already in 1946 Cartan came to Oberwolfach, where he met Behnke again after eight years. The Oberwolfach guest book records that Cartan participated in a concert (Haydn, Bach, Beethoven) on November 1, 1946, and lectured on Galois theory for noncommutative fields on November 4, 1946. In this way

Cartan began his efforts to reconcile the mathematicians on both sides of the Rhine (cf. Remmert's contribution).

Cartan was always interested in the work of Behnke and his students, in particular Stein, Grauert, Remmert, and myself.

For Stein's sixtieth birthday (1973) Cartan lectured at a conference in Munich and wrote an article "Sur les travaux de Karl Stein". He reported in particular about Stein's *Habilitationsschrift* (1940), which concerns Cousin's second problem. The title (translated into English) is: "Topological conditions for the existence of holomorphic functions with a given zero divisor". This is related to the famous Theorem B of Cartan and Jean-Pierre Serre.

Cartan reported about my thesis (written under Behnke and Hopf) in the Bourbaki seminar of December 1953. In the thesis I had introduced complex spaces of dimension 2 and described the resolution of their singularities.

In his *Habilitationsschrift*, Hans Grauert proved that, for a Stein manifold X and a complex Lie group L, the classification of topological principal fiber bundles over X with structural group L coincides with the classification of analytic principal fiber bundles over X with structural group L. This includes the solution of Cousin I and II (L = C or C*, respectively). Grauert published his work in three parts in *Mathematische Annalen* in 1957 and 1958 and thanked Cartan for advice. Cartan lectured on Grauert's results in the "Symposium Internacional de Topologia Algebraica, Mexico 1956".

In his contribution Remmert shows that Henri Cartan was a real European. I want to emphasize this by the following remarks:

The first European Congress of Mathematics took place in Paris from July 6 to July 10, 1992. In his opening speech, Cartan calls the congress an event of great importance showing that the mathematicians know the solidarity of the countries of Europe, which are different in so many ways but have a rich common heritage and a common future. Cartan was especially glad that this first European Congress reunited the mathematicians from the two parts of Europe that were separated for such a long time. Cartan's eighty-eighth birthday was celebrated during the first European Congress at the residence of the German Ambassador in Palais Beauharnais.

The Association Européenne des Enseignants (European Association of Teachers) was founded in Paris in 1956. Cartan was president of the French section. As such he took the initiative to invite participants from eight European countries to a meeting in Paris in October 1960. Emil Artin, Heinrich Behnke, and I were the German members. The second meeting of this committee was in Düsseldorf in March 1962. As a result, the *Livret Européen de l'Etudiant (European Student's Record)* was published and distributed by the European Association of Teachers. The booklet contained a description of minimal requirements for basic courses. It was supposed to increase the mobility of students from one country to another. The professor of one university would mark in the booklet the contents of courses attended by the student. The professor at the next university would then be able to advise the student in which courses to enroll. The booklet was not used very much. For me it was often useful when reforms of the contents of courses were discussed.

The efforts of Cartan to harmonize mathematical studies in Europe date back more than fortyfive years. Now we are implementing the Bologna process. In all European countries bachelor's and master's degrees are to be introduced. Is this the harmonization we wanted?

Cartan, the European, was also active at the international level. He was president of the International Mathematical Union for the four years 1967 to 1970. He addressed the International Congress of Mathematicians in Nice in 1970 during its opening ceremony and announced the names of the Fields Medal winners. Sergei Novikov, one of the four winners, was unable to attend, indicating the political difficulties of the time.

The mathematicians of my generation, from Germany and everywhere else, learned from Henri Cartan. His papers, books, and seminars were a source of inspiration. He showed us the right way of developing international cooperation. He and his wife were charming hosts for many visitors to Paris. He has left us, but we will always remember him with gratitude.