Unveiling the commemorating plate of Wilhelm Killing and Karl Weierstraß

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If one does a search for the combined quoted string "The Greatest Mathematical Paper of All Time" in either Google or MathSciNet or Zentralblatt für Mathematik, one is uniformly directed to the name and the magnificent mathematical work of Wilhelm Killing (1847 – 1923). Especially one is referred to Killing's classification of the simple Lie algebras over the complex numbers, which was discovered by him while he was a Professor at the Lyceum Hosianum in Braunsberg or Braniewo (which is its Polish name)[2].

Killing's result was published in four consecutive papers in the Mathematische Annalen [6], 1888–1890, entitled "Die Zusammensetzung der stetigen endlichen Transformationsgruppen".

The sequence of these papers was giving reason for the title of a biographical Math. Intelligencer article about Killing by A. J. Coleman (see [1]: "The Greatest Mathematical Paper of All Time"), written on the occasion of the centennial anniversary of their publication.

Indeed, Coleman's admiration for Killing's work was supported by others: Jean Dieudonné underlines, in his affirmative review of Coleman's article in Math Reviews [3], that Killing's *"result became a most important milestone in modern mathematics"*.

This is easily verified by looking into the history of mathematics of the last century. Killing's classification result has been revisited, revised, simplified

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[2]In the 19^{th} century, Braunsberg belonged to East Prussia, Germany. Now, the city Braniewo is in Poland (see map).

and extended into broader and different areas by eminent mathematicians like E. Cartan in his Thèse (1894), H. Weyl (1925), B. L. van der Waerden (1933), H. S. M. Coxeter (1934), E. Witt (1941), E. Stiefel ((1942), E. D. Dynkin (1947), C. Chevalley (1955, 1961 ff.), J, Tits (1966 ff.), V. G. Kac and R. V. Moody (1968), F. Bruhat (1972 ff.), just to mention only a few.

To indicate Killing's mathematical influence even into daily mathematical language, let us mention that he introduced the notion "characteristic equation" ("charakteristische Gleichung" in German) of a matrix (cf. [6] II, p. 2), which nowadays every beginning student of mathematics gets acquainted with.

And in various mathematical disciplines the notion "semi-simple" ("halbeinfach" in German) has become familiar – this was invented by Killing as well in [6], III, p. 74, where he formulates:

> *Solange ein besserer Name fehlt, möge es gestattet sein, eine solche (Gruppe) als eine halbeinfache zu bezeichnen.*

i.e.,

> *As long as a better name is lacking, it might be allowed to denote such a group as semi-simple.*

Apparently, a better name was never found.

A more detailed description of the mathematical history of Killing's classification result including bibliographical remarks has been given in [9].

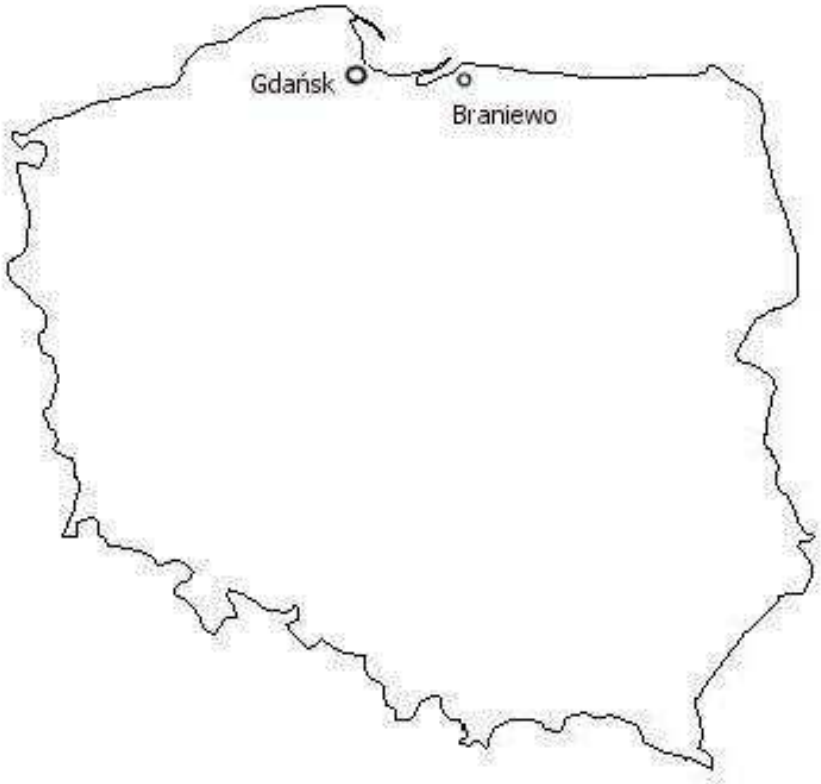
Killing, as a mathematician, was a student of Karl Weierstraß at Berlin, where he got his PhD in 1872. After several years as a high school professor at various places, but with several publications on geometric subjects, he was, on a recommendation by Weierstraß, appointed to a chair of mathematics at the "Lyceum Hosianum". At this place his advisor Weierstraß himself as well had held a teaching position from 1848 till 1856.

A very detailed biographical description of both Killing's and Weierstraß' life is given in [8] and [4], see also [5] and [7].

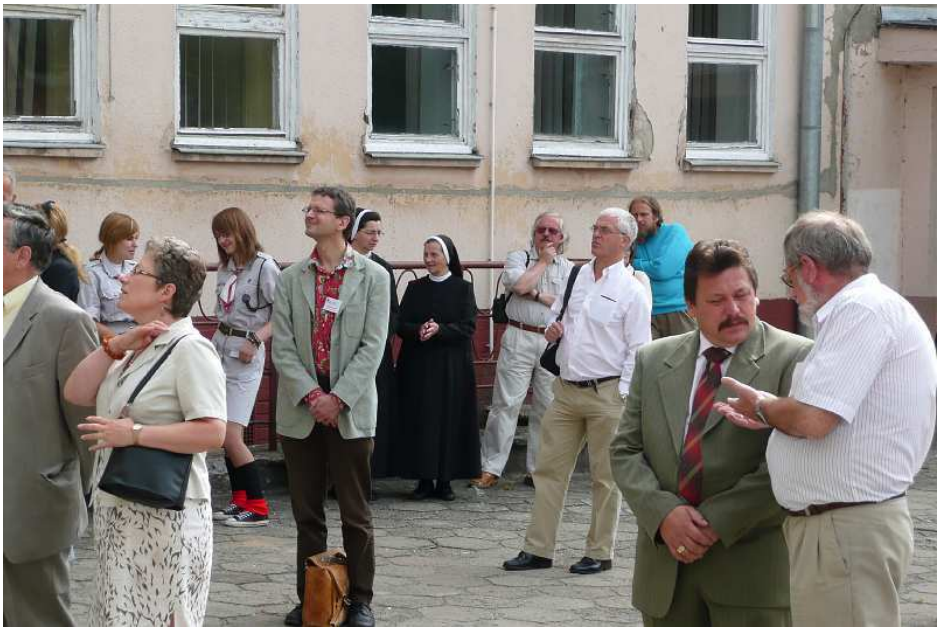
In November 1996, the first named author gave a lecture on "Linear algebraic groups and related structures" at the University of Bielefeld, in which he mentioned the Intelligencer article by A. J. Coleman ([1]) about Wilhelm Killing.

The lecture was attended by the second author from Gdańsk University, who got very much interested in the fact that Wilhelm Killing lived 10 years (1882 – 1892) in Braunsberg, where he was a professor at the Lyceum Hosianum.

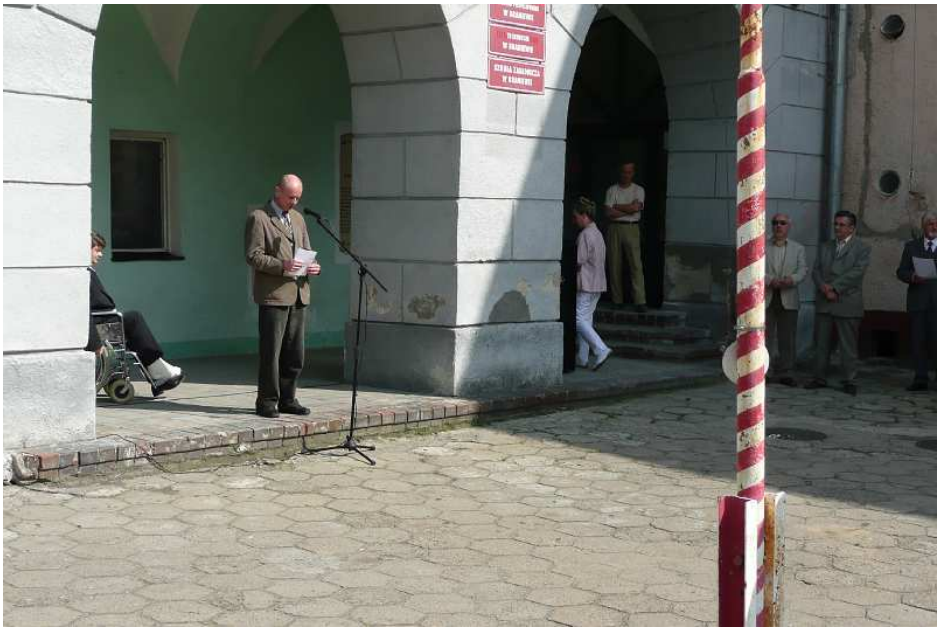
A map of Poland



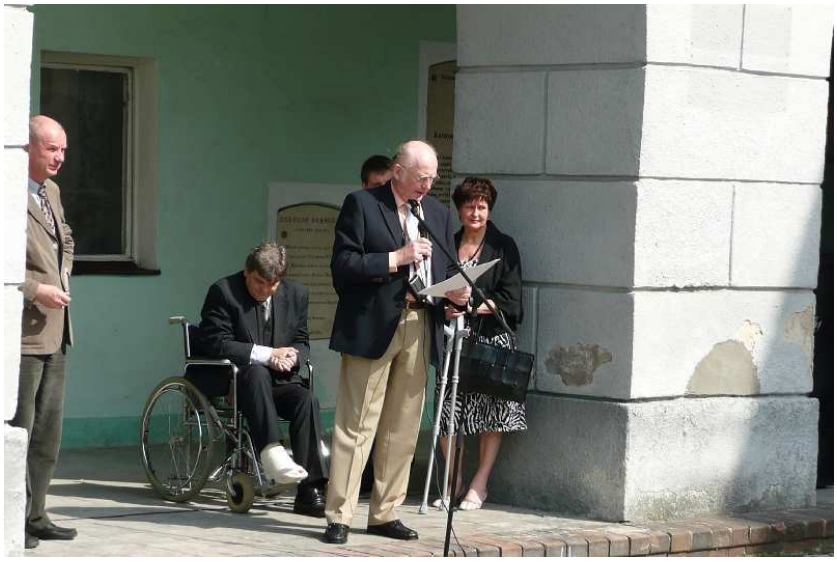
The final ceremony: participants



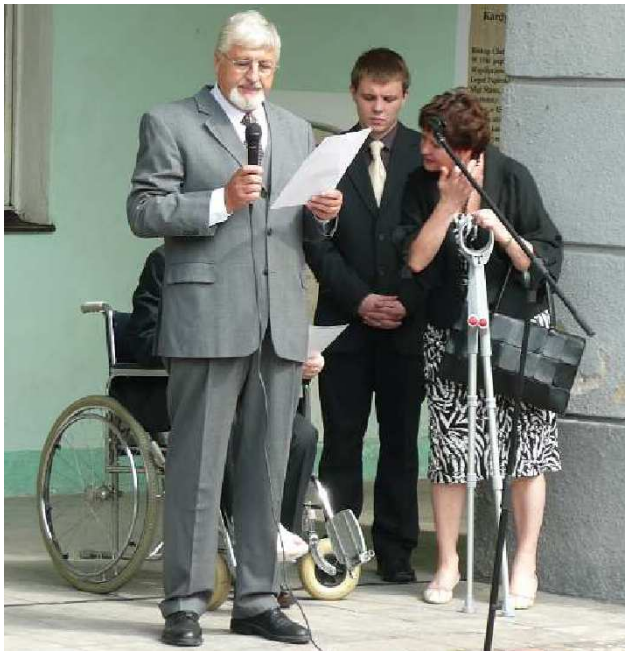
The final ceremony: Andrzej Szczepański is leading the ceremony



The final ceremony: Jürgen Elstrodt is reading a message from the "Oberbürgermeister der Stadt Münster", next to the Starost of the city of Braniewo



The final ceremony: Falko Lorenz is reading a message from the Rector of Münster University



As already mentioned, today, the former Braunsberg is the Polish city Braniewo. It is located 110 kilometers north-east of Gdańsk (cf. picture). Inspired by the above, the Institute of Mathematics of the University of Gdańsk organized a workshop at Braniewo entitled "The Second Days of Hyperbolic Geometry in memoriam of Wilhelm Killing" (August 31 – September 2, 1998). A. J. Coleman wrote an address entitled "Killing in Braniewo", see [2].

At that time we recognized that also Karl Weierstraß worked, as a school teacher, in Braniewo from 1848 to 1856. During this workshop, the idea of a memorial plate in honor of W. Killing and K. Weierstraß was born. Its realization took 10 years, because money was lacking, and it was not straightforward to obtain permisssion.

The final ceremony of unveiling the commemorating plate took place on July 24-25, 2008. It was organized by the Institute of Mathematics University of Gdańsk and Braniewo's Starost[1], the local government administration. On the plate is a simple text (in German and Polish) with the information that W. Killing and K. Weierstraß were teachers in Braniewo, and with the signatures of the Polish Mathematical Society and of the Deutsche Mathematiker-Vereinigung [10]. On the honorary Committee were the Rectors of University of Gdańsk and University of Warmia and Mazury in Olsztyn.

The ceremony began with a Mass in memory of W. Killing and K. Weierstraß, celebrated by the Roman Catholic Bishop Jacek Jezierski. Then all the participants (around 60) went to the front of building of the former Lyceum Hosianum[2] to unveil the plate. The first speaker was the Starost of Braniewo, Leszek Dziąg. Then, addresses were read of the Rector of Münster University (by F. Lorenz) and the "Oberbürgermeister der Stadt Münster" (by J. Elstrodt), since W. Killing later has held a position as a professor at the University of Münster, and since the cities of Braniewo and of Münster are related by a European city partnership. Finally, L. Dziąg and A. Szczepański did unveil the plate and the bishop did sacrifice it.

After the ceremony, the memorial colloquium was held. The first one hour lecture, given by F. Lorenz (University of Münster), was about the life of W. Killing, and the second, given by J. Elstrodt (University of Münster)

[1]The Starost is the head of the county administration.

[2]Prof. Falko Lorenz (Department of Mathematics, University of Münster) kindly informed the authors that it is the front of the former Catholic Gymnasium because from the buildings of the former Lyceum Hosianum nothing is left.

The memorial plate

was about the life of K. Weierstraß. These were followed by mathematical lectures by F. Knopf (University of Erlangen), T. Januszkiewicz (University of Ohio and University of Wrocław), F. E. A. Johnson (University College of London) and W. Soergel (University of Freiburg). In the evening of the first day there was a concert, given by a women piano duo, and a party of the mayor of the city Braniewo.

The whole ceremony was made possible by the kind financial support of the University of Gdańsk, University of Münster, University of Warmia and Mazury in Olsztyn, GW0 publishing house, the Starost and the City of Braniewo, and the Deutsche Mathematiker-Vereinigung.

For more information, together with photos and full texts of the historical lectures by J. Elstrodt and F. Lorenz, see [11].

References

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[10] http://math.univ.gda.pl/img/braniewo/slides/P1010161.html

[11] http://math.univ.gda.pl/braniewo

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