ANTIQUITATES MATHEMATICAE
Vol. 9(1) 2015, p. 107–109
doi: 10.14708/am.v9i1.809

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Mark Kac: A Reminiscence[1]

Mark Kac (1914-1984) was born in the then Russian and now Ukrainian city of Kremenec, also the birthplace of the renowned violinist Isaac Stern. In 1922, when he was eight years old, the town became part of Poland and assumed the name Krzemieniec; because he received virtually all of his education in Polish and was a Polish citizen on arriving, in 1938, in the United States, he always considered himself to be of Polish origin, though the truth is more complicated.

He received his Ph.D. from the Jan Kazimierz University, in Lwów (today, Lviv, a.k.a. Lemberg), a student of the renowned Hugo Steinhaus. In 1938 he was awarded a postdoctoral fellowship at Johns Hopkins, which was what took him to the United States He made the journey with the expectation of returning to his homeland in a year's time, but was prevented from doing so by the outbreak of war. The remainder of his family, stranded in Poland, perished in the Holocaust.

Fortunately, he was able to remain in the U.S., having been offered a year-long appointment at Cornell. Told at the time that there was no possibility of an extension, he nonetheless quickly became a member of the permanent faculty, remaining there for over twenty years. In 1961 he joined the Rockefeller University in New York City as part of a group which also included the physicists George Uhlenbeck and Theodore H. Berlin. In 1981 he became the chair of the Department of Mathematics at the University of Southern California, his tenure in that position cut short by his death three years later.

It must be left to others to comment on his accomplishments as a mathematician. I can, however, say a little of a general nature regarding how he thought about mathematics and its place in the intellectual firmament.

Quite atypically, he was not primarily interested in theorems and proofs, nor was he unduly obsessed with rigor: insight was what mattered to him more than anything else. ('A definition is the epitaph of an

[1] **Mark Kac: wspomnienie.**

idea,' he liked to say.) In addition, I recall him saying to me once that he considered mathematics to be an empirical subject. About this I believe he was mistaken if the pronouncement is taken absolutely literally, but I think the point he was really trying to make is that mathematics commonly advances in response to 'real world' problems and depends on them for its vitality. This is no doubt why, though he did not consider himself best suited to a life in the natural sciences, he gravitated toward others who were. His foray with Paul Erdös into probabilistic number theory was thus something of an anomaly.

Despite the pain of his wartime losses, he lived a life that was otherwise serene and untroubled; he was not, as so many intelligent and creative people are, beset by demons. His happy — nay, joyous — marriage to the former Katherine Mayberry, which lasted to the end of his days, was no doubt one of the reasons. He had an impish sense of humor, perhaps most clearly displayed when, in commenting on a magazine article written about him, he said 'After reading it I was consumed with the desire to meet myself.'

He had, in addition to his mathematical accomplishments, the distinction of contributing to the folklore of the scientific world by means of the following passage in his autobiography Enigmas of Chance (Harper and Row, 1985, and University of California Press, 1987): 'There are two kinds of geniuses: the "ordinary" and the "magicians". An ordinary genius is a fellow whom you and I would be just as good as, if we were only many times better. There is no mystery as to how his mind works. Once we understand what they've done, we feel certain that we, too, could have done it. It is different with the magicians.' He had in mind specifically the physics Nobelists Hans Bethe (ordinary) and Richard Feynman (magician), which is what prompted the science writer James Gleick to entitle his book on Feynman No Ordinary Genius.

This difference is relevant to much more than mathematics and physics. For example, while I am not in a position to appreciate the work of Bethe or Feynman, I can immediately see how the contrast applies in the world of music. Bach and Beethoven: towering geniuses, but of the ordinary variety; not so Mozart, Chopin and Debussy, magicians all.

The math gene skipped his children's generation, but it re-emerged in the next, most particularly in his grandson, Stefan Kac (born 1982). Although he chose music as a career, he showed some mathematical precocity, including an early grasp of probability, as on the occasion — he was about eight at the time — when he happened to mention to me

that the younger sister of one of his friends shared a birthday with her mother. 'That's interesting,' I responded, to which Stefan replied, barely containing his impatience, 'Dad, there are only three hundred sixty-five days in a year and there are a lot more people in the world than that — it's not a big deal.' The person who would have most appreciated this story, alas, had died when Stefan was only two, so I was denied the pleasure of sharing it with him, and of sensing the thrill he would surely have felt on hearing it. Like all of us I have felt the stab of loss often, but never more acutely than on that account.

Postscript A recording of a brief interview with Mark Kac by Eugene B. Dynkin, including anecdotes about figures like Steinhaus, Banach and Sierpiński can be heard at
http://dynkincollection.library.cornell.edu/biographies/857.

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(Received: 29th of July 2015; revised: 2nd of August 2015)