

bio.1 Rózsa Péter

his:bio:pet:
sec

Rózsa Péter was born Rózsa Politzer, in Budapest, Hungary, on February 17, 1905. She is best known for her work on recursive functions, which was essential for the creation of the field of recursion theory.

Péter was raised during harsh political times—WWI raged when she was a teenager—but was able to attend the affluent Maria Terezia Girls' School in Budapest, from where she graduated in 1922. She then studied at Pázmány Péter University (later renamed Loránd Eötvös University) in Budapest. She began studying chemistry at the insistence of her father, but later switched to mathematics, and graduated in 1927. Although she had the credentials to



Figure 1: Rózsa Péter

teach high school mathematics, the economic situation at the time was dire as the Great Depression affected the world economy. During this time, Péter took odd jobs as a tutor and private teacher of mathematics. She eventually returned to university to take up graduate studies in mathematics. She had originally planned to work in number theory, but after finding out that her results had already been proven, she almost gave up on mathematics altogether. She was encouraged to work on Gödel's incompleteness theorems, and unknowingly proved several of his results in different ways. This restored her confidence, and Péter went on to write her first papers on recursion theory, inspired by David Hilbert's foundational program. She received her PhD in 1935, and in 1937 she became an editor for the *Journal of Symbolic Logic*.

Péter's early papers are widely credited as founding contributions to the field of recursive function theory. In Péter (1935a), she investigated the relationship between different kinds of recursion. In Péter (1935b), she showed that a certain recursively defined function is not primitive recursive. This simplified an earlier result due to Wilhelm Ackermann. Péter's simplified function is what's now often called the Ackermann function—and sometimes, more properly, the Ackermann-Péter function. She wrote the first book on recursive function theory (Péter, 1951).

Despite the importance and influence of her work, Péter did not obtain a full-time teaching position until 1945. During the Nazi occupation of Hungary during World War II, Péter was not allowed to teach due to anti-Semitic laws. In 1944 the government created a Jewish ghetto in Budapest; the ghetto was cut off from the rest of the city and attended by armed guards. Péter was forced to live in the ghetto until 1945 when it was liberated. She then went on to teach at the Budapest Teachers Training College, and from 1955 onward at

Eötvös Loránd University. She was the first female Hungarian mathematician to become an Academic Doctor of Mathematics, and the first woman to be elected to the Hungarian Academy of Sciences.

Péter was known as a passionate teacher of mathematics, who preferred to explore the nature and beauty of mathematical problems with her students rather than to merely lecture. As a result, she was affectionately called “Aunt Rosa” by her students. Péter died in 1977 at the age of 71.

Further Reading For more biographical reading, see (O’Connor and Robertson, 2014) and (Andrásfai, 1986). Tamassy (1994) conducted a brief interview with Péter. For a fun read about mathematics, see Péter’s book *Playing With Infinity* (Péter, 2010).

Photo Credits

Rózsa Péter, p. 1: Portrait of Rózsa Péter, undated, photographer unknown. Courtesy of Béla Andrásfai.

Bibliography

- Andrásfai, Béla. 1986. Rózsa (Rosa) Péter. *Periodica Polytechnica Electrical Engineering* 30(2-3): 139–145. URL <http://www.pp.bme.hu/ee/article/view/4651>.
- O’Connor, John J. and Edmund F. Robertson. 2014. Rózsa Péter. URL <http://www-groups.dcs.st-and.ac.uk/~history/Biographies/Peter.html>.
- Péter, Rózsa. 1935a. Über den Zusammenhang der verschiedenen Begriffe der rekursiven Funktion. *Mathematische Annalen* 110: 612–632.
- Péter, Rózsa. 1935b. Konstruktion nichtrekursiver Funktionen. *Mathematische Annalen* 111: 42–60.
- Péter, Rózsa. 1951. *Rekursive Funktionen*. Budapest: Akadémiai Kiado. English translation in (Péter, 1967).
- Péter, Rózsa. 1967. *Recursive Functions*. New York: Academic Press.
- Péter, Rózsa. 2010. *Playing with Infinity*. New York: Dover. URL https://books.google.ca/books?id=6V3wNs4uv_4C&lpq=PP1&ots=BkQZaHcR99&lr&pg=PP1#v=onepage&q&f=false.
- Tamassy, Istvan. 1994. Interview with Róza Péter. *Modern Logic* 4(3): 277–280.