

Kerékjarto | Encyclopedia.com

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(b. Budapest, Hungary, 1 October 1898; d. Gyöngyös, Hungary, 26 June 1946)

mathematics.

In 1920 Kerékjártó took the Ph.D. degree at Budapest University. He became a privatdocent at Szeged University in 1922, extraordinary professor in 1925, and professor ordinarius in 1929. In 1938 he became professor ordinarius at Budapest University. From 1922 to 1926 he had also traveled abroad: in 1922-1923 he stayed at Göttingen University where he gave lectures on topology and mathematical cosmology; in 1923 he taught geometry and function theory at the University of Barcelona; and from 1923 to 1925 he was at [Princeton University](#), where he lectured on topology and continuous groups. When he returned to Europe he lectured in Paris. Kerékjártó was a corresponding member of the Hungarian Academy of Sciences from 1934 and a full member from 1945. He was a coeditor of *Acta litterarum ac scientiarum Regiae Universitatis hungaricae*. . . , Sectio scientiarum mathematicarum, beginning with volume 6 (1932-1934).

After Max Dehn and P. Heegaard's article "Analysis situs" (1907), in *Encyklopädie der mathematischen Wissenschaften* and Schönflies' *Die Entwicklung der Lehre von den Puktmannigfaltigkeiten* (1908), the first three monographs on topology to appear were Veblen's "Analysis situs," in American Mathematical Society Colloquium Publications (1922), Kerékjártó's (1923), and S. Lefschetz's "L'analysis situs et la géométrie algébrique" (1924). Kerékjártó's probably sold best and was the most widely known, but it has exerted much less (if any) influence than the two others. One reason is the restriction of subject and method to two dimensions, at a time when all efforts were directed to understanding higher dimensions. The other, decisive reason is that everyone knew Kerékjártó's *Vorlesungen über Topologie* was not a good book and, therefore, nobody read it. The present author has held this opinion for many years and now feels obliged to make a closer examination of Kerékjártó's works.

The book opens with a proof which is unintelligible and probably wrong. This, indeed, is the worst possible beginning, but it continues the same way. The greater part of Kerékjártó's own contributions are hardly intelligible and most are apparently wrong. The work of others is often taken over almost literally or in a way which proves that Kerékjártó had not really assimilated the material. The level of the book is far below that of topology at that time, and the organization is chaotic. When referring to a concept, a notation, or an argument, he often quotes a proof, a page, or an entire chapter—but often the material quoted is not found where he cites it; sometimes footnotes serve to fill gaps in arguments. For many years this also was the style of Kerékjártó's papers. They are full of mistakes or gaps which should have been filled by other papers which never appeared.

Kerékjártó's papers written around 1940 make a more favorable impression. In general they are correct. They deal with his earlier problems on topological groups but use methods which in the meantime had become obsolete. It is quite probable that he did not know the developments in topology after 1923. The strangest feature is that he never used set-theory symbols, such as the signs for belonging to a set, inclusion, union, and intersection. Apparently he did know of their existence.

Kerékjártó mainly continued the work of Brouwer and Hilbert on mappings of surfaces and topological groups acting upon surfaces. The undeniable merits of his work are obscured by the manner of presentation. The classification of open surfaces is usually ascribed to Kerékjártó, but the exposition of this subject in his book hardly justifies this claim. It was probably his greatest accomplishment that he became interested in groups of locally equicontinuous mappings (of a surface), although his definition of this notion had already been fundamental in Hilbert's work. The best result in studying such groups with Kerékjártó's methods had recently been achieved by L. Fary, who proved that equicontinuous, orientation-preserving groups of the plane are essentially subgroups of the Euclidean or of the hyperbolic group.

In addition to the work on topology in German and a work on foundations of geometry in Hungarian, which has been translated into French, Kerékjártó wrote some sixty papers, most of them comprising only a few pages. The bibliography is restricted to the more mature ones.

BIBLIOGRAPHY

Kerékjártó's works include *Vorlesungen über Topologie* (Berlin, 1923); "Sur le caractère, topologique du groupe homographique de la sphère," in *Acta mathematica*, **74** (1941), 311-341; "Sur le groupe des homographies et des antihomographies d'une variable complexe," in *Commentarii mathematici helvetici*, **13** (1941), 68-82; "sur les groupes compacts de transformations topologiques des surfaces," in *Acta mathematica*, **74** (1941), 129-173; "Sur le caractère

topologique du groupe homographique de la sphere,” in *Journal de mathématiques pures et appliquées*, 9th ser., **2** (1942), 67-100; and *A geometria alapjai*, 2 vols. (I, Szeged, 1937; II, Budapest, 1944), translated into French as *Les fondements de la géométrie euclidienne* 2 vols. (Budapest, 1955-1956).

See also I. Fary, “On a Topological Characterization of Plane Geometries,” in *Cahiers de topologie et géométrie différentielle*, **7** (1964), 1-33. There is also an obituary in *Acta Universitatis szegediansis, Acta scientiarum mathematicarum*, **11** (1946-1948), v-vii.

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