Olli Lehto

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ACADEMICIAN OLLI LEHTO died on the last day of the year 2020. He was 95 years old and born on 30 May 1925 in Helsinki.

Lehto took part in the Continuation War on the Karelian Isthmus as well as the Lapland War. He passed his matriculation examination during the war, started studying mathematics at the University of Helsinki after the war in 1945 and received his Master of Science degree already in 1947. His first job was at the cable factory Kaapelitehdas, at what would later become Nokia Oy, but Rolf Nevanlinna, who had accepted a post at the University of Zurich, arranged a six-month scholarship for Lehto in Zurich in 1948. Lehto defended his doctoral thesis on complex analysis in 1949 at the University of Helsinki, and in the beginning of 1951, he took up his first academic position as a higher grade assistant in the Department of Mathematics. However, he continued to work in cooperation with Kaapelitehdas. A couple years later, Lehto became Nevanlinna's assistant at the Academy of Finland.

Olli Lehto was appointed Associate Professor of Mathematics in 1956, which expedited his research. Back in the 19th and early 20th century, mathematical research in Finland was focused on complex analysis. The most prominent countries in the field were France and Germany, but Ernst Lindelöf's research on function theory was also widely known. His student, Rolf Nevanlinna, created the value distribution theory, and the Fields Medal was awarded to another student, Lars Ahlfors, on his work on function theory, and these achievements lifted Finland to the level of great countries in complex analysis. Lehto has written biographies of these three mathematicians: *Tieteen aatelia – Lorenz Lindelöf ja Ernst Lindelöf* (2008), *Korkeat maailmat – Rolf Nevanlinnan elämä* (2001) and *Tieteen huipulla – Lars Ahlforsin elämä* (2013).

Lehto co-authored several studies on complex analysis with K. I. Virtanen in the 1950s. The most notable of these was *Boundary behaviour and normal meromorphic functions* (1957). However, the course was about to change. German mathematicians, primarily O. Teichmüller, had discovered distorted conformal mappings, known as quasiconformal mappings. Ahlfors was interested in the field and Lehto also noticed that it gave rise to new questions. This constituted a major change, because quasiconformal map-

pings fall under real analysis in terms of their methods. As mathematical methods penetrated new fields in the early 20th century, real analysis and its applications had proven their feasibility and become one of the mainstreams of mathematics. The new trend developed from the old research tradition provided new opportunities for Finnish mathematical research and the impact can be seen to this day.

Lehto joined forces with K. I. Virtanen to form a research group that focused on quasiconformal mappings, and later in the 1950s, a seminar in the field was established at the University of Helsinki. This coincided with a one-year visit by the American mathematician F. W. Gehring to Helsinki, who wanted to learn about the latest achievements in complex analysis. Gehring was a real analyst by education and after noting the shifting interest towards quasiconformal mappings, he too started to study this new field. He eventually became Lehto's long-standing partner and friend. Although Gehring co-authored only one study with Lehto, namely, *On the total differentiability of functions of a complex variable* (1959), he had a long-lasting impact on mathematics in Finland. Lehto supervised 18 doctoral theses, 12 of which were by authors who later became professors of mathematics or related disciplines. Several of them have co-authored publications with Gehring.

Lehto co-authored a monograph with Virtanen entitled *Quasikonforme Abbildungen* (1965), and the English translation still remains a groundbreaking work on the topic of plane quasiconformal mappings. His book entitled *Univalent functions and Teichmüller spaces* (1987) is also known widely around the world. Lehto published 39 mathematical studies, and this figure does not include his writings for a wider audience.

Olli Lehto was appointed Professor of Mathematics in 1961, served as Research Professor from 1970–1975 and was granted the title of academician in 1975. Lehto also made significant contributions to the university administration during his career. His supervisory tasks and position as Dean of the Faculty of Science led him to become the Rector of the University of Helsinki in the years 1983–1988 and Chancellor in 1988–1993.

Lehto served in international positions in mathematics for a long time, including as Vice-President of the International Association of Universities (IAU). He was Secretary General of the International Mathematical Union (IMU) from 1983–1990. During the Cold War, he settled scientific disputes between superpowers and was largely to thank for China becoming a member of the Union. He served as the chair of the committee that organized the International Congress of Mathematicians ICM-78 in Helsinki. Lehto donated the surplus of the Congress to the Finnish Academy of Science and Letters, creating the Mathematics Fund. He also wrote a history of the IMU entitled *Mathematics Without Borders – A History of the International Mathematical Union* (1998). History and especially the history of mathematics was close to Lehto's heart and, after retiring, he dedicated himself to the field, publishing not only the biographies mentioned above, but also a book entitled *Veljekset Vilho, Yrjö ja Kalle Väisälä* (2004).

Lehto was elected a member of the Finnish Academy of Science and Letters in 1962 and an honorary member in 2001. He served as the chair of the Publications Committee and a long-standing Editor of

the journal of the Academy, Annales Academiae Scientiarum Fennicae Mathematica, from 1974–1999. It was thanks to him that the journal became the first international scientific open access journal in Finland and one of the first such journals in mathematics in the entire world.

Lehto was granted several honorary awards, and the University of Turku, Moscow State University, Åbo Akademi University, the University of Bucharest and the University of Joensuu bestowed upon him the degree of honorary doctor. He was a member of several foreign academies of sciences.

One of Lehto's hobbies was collecting butterflies, which he enjoyed on his many trips abroad, even in fairly exotic locations, such as Central America. Lehto also wrote a book about his hobby entitled *Perhosten värittämä maailmani* (2011). Lehto also published his memoirs, *Ei yliopiston voittanutta* (1999). The book provides a good overview of research in mathematics and his long career in the service of science.

Obituary by Olli Martio

Photo: Jari Väätäinen