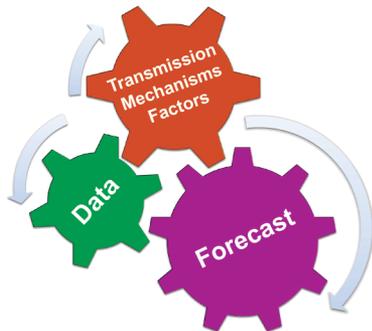




LETTERS TO THE EDITOR

Letter to the Editor

In the interesting and informative communication *Modeling and Forecasting COVID-19* in the April 2021 *Notices*, this figure puzzled me.



I stared at the arrows for a long time, trying to resolve the rotations in this locked three gear configuration. The single reference in the text did not help:

Lastly, the forecast may influence NPIs and human social behavior because the latter are likely to be based on the outcome of the forecast. The changes in human social behavior can further affect the transmission dynamics and shape the future of an epidemic; see Figure 3.

—Ethan Bolker
Professor of Mathematics, Emeritus
UMass Boston

William M. Boothby

William M. Boothby was born April 1, 1918, in Detroit, Michigan, the son of Thomas Franklin and Florence Munger Boothby. He received a six-year scholarship to attend the Cranbrook Academy in Bloomfield Hills, Michigan. He earned a Baccalaureate degree from the University of Michigan in 1940 and immediately commenced graduate studies in mathematics there. These were interrupted by World War II. In 1942 he enlisted in the Army Air Force, trained as a pilot, and flew over 600 hours before his discharge in 1945. During his training he was copilot of a B17 that was

forced by weather to crash land in a field in upstate New York in January 1945.¹

He married Ruth Robin of Detroit, Michigan, in 1947. They raised three sons, Daniel, Thomas, and Mark. Under the supervision of Wilfred Kaplan he completed his PhD in mathematics at the University of Michigan in 1949. His dissertation was titled “A topological study of the level curves of harmonic functions.” His first two publications continued and extended this work. He was appointed Instructor and later Assistant Professor of Mathematics at Northwestern University in 1948. He held a one-year fellowship at the Eidgenössische Technische Hochschule (ETH) in Zurich during 1950–51. In 1959 Washington University in St. Louis (WUSTL) succeeded in recruiting Bill to join their Mathematics Department as an effort to build its research activity and ability to recruit graduate students. He spent the academic year 1960–61 on a fellowship at the Institute for Advanced Study in Princeton, New Jersey.

During his time at Northwestern, Boothby’s research interests broadened to Hermitian manifolds and to contact structures. High points of this research are contained in his paper with H. C. Wang titled “On contact manifolds” published in 1958 in the *Annals of Mathematics*, and his paper with Wang and Shoshichi Kobayashi titled “A note on mappings and automorphisms of almost complex manifolds” published in 1963 in the *Annals of Mathematics*. An early indication of Bill’s eventual strong interest in control theory is contained in his paper “On the finite subgroups of connected Lie groups,” written with H. C. Wang and published in 1965 in *Comment. Math. Helv.*

In 1975 Bill published his very popular textbook *An Introduction to Differentiable Manifolds and Riemannian Geometry*, which defined the curriculum and standard of the introductory graduate differential geometry course worldwide for the next quarter century. A second edition was published in 1986.

In addition to the fellowships at ETH and the Institute, Bill and Ruth spent many semesters abroad beginning with a one-year sabbatical leave during 1965–66 at the Department of Mathematics of the University of Geneva in Switzerland. His research during this sabbatical was published in “On the integral curves of a linear differential form of maximum rank” in *Math. Annalen* in 1968. In

*We invite readers to submit letters to the editor at notices-letters@ams.org.

¹See <https://www.townofnelson-ny.com/index.php/town-info/enhs-newsletter-hills-and-hollows/hills-and-hollows-vol-4-no-1-jan-2020-2/viewdocument/44> for a detailed account of this event.

1971 they spent a one-semester leave at the Department of Mathematics of the University of Strasbourg in France.

Bill directed seven PhD students during his career, all at WUSTL. In chronological order these are Philip Zwart (1965), Humberto Alagia (1971), Eduardo Cattani (1972), Jackson Sedwick (1974), Ellen Livingston (1982), Riccardo Marino (1982), and Wijesooriya Dayawansa (1986).

In the middle of the 1970s Bill's research interests became more applied, primarily in control theory. His student Philip Zwart became a professor in the Systems Science and Mathematics Department in the Engineering School of WUSTL. Bill began productive research collaborations with several people in that department, including David Elliott, Daizhan Cheng, Tzyh Jong Tarn, and Zwart. He published many papers in this area in the decade preceding his retirement in 1988, mostly coauthored with these colleagues and his students Marino and Dayawansa. Federal law at that time required Bill to retire from WUSTL at age 70 when he had barely reached maturity. Bill was a sound influence on many students and colleagues. He counseled students during the draft and Vietnam conflict. He is remembered warmly by many WUSTL graduate students.

Bill died on February 14, 2021, in Nashville, Tennessee, just six weeks before his 103rd birthday. He is survived by his sons Daniel Boothby of Montreal, Canada, Thomas Boothby of State College, Pennsylvania, and Mark Boothby of Nashville, Tennessee. He was preceded in death by his wife, Ruth Boothby, who died in June 2013, and his brother Thomas Robert Boothby.

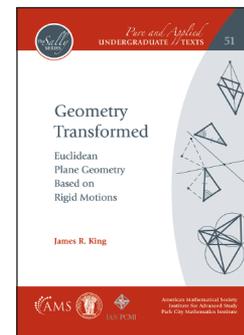
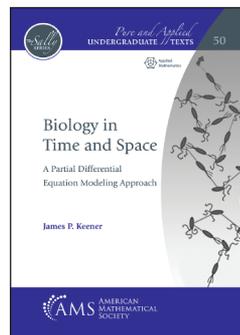
Sincerely yours,

Gary R. Jensen, Professor of Mathematics Emeritus

Steven G. Krantz, Professor of Mathematics

Washington University in St. Louis

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