

## Obituary

### Ivan Tolstoy, 1923–2023

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**Ivan Tolstoy** was a Renaissance man: scientist, writer, athlete, epicure, and more.

He was the author of two technical monographs and over 100 publications and was a winner of the Acoustical Society of America (ASA) Pioneer Medal in Underwater Acoustics. He made contributions not only in underwater acoustics but also in geophysics and astrophysics. From the ocean floor to earth to space.

But he was also a writer of books that helped to popularize science, such as a biography of James Clerk Maxwell, a book on the philosophy of science, and a geophysics introduction for the general public. He was also involved in alerting people to the dangers of nuclear waste disposal.

In his youth, Ivan was a vigorous athlete, a self-taught classical guitarist, an amateur sailor, an artist (usually pen and ink), a superb chef, a wine connoisseur, and a passionate chess player. He was also a speaker of multiple languages and was fluent in French, Russian, and English. He was born in Baden-Baden, Germany, to Russian nobility who fled Russia during the revolution, but he was raised in Paris (finishing first in his class at the Sorbonne University, Paris, France, with a degree in geology).

Ivan was given United States citizenship in 1945, as a result of helping downed US airmen escape from the Nazis during World War II and subsequently went to Columbia University, New York, New York, for graduate studies with Maurice Ewing. He was a discoverer of T phases in underwater seismology (some say they were named after him but he always claimed that it was T for tertiary waves). After his doctorate, he became a professor at Columbia University and associate director of their Hudson Labs. He later became a professor at Florida State University, Tallahassee, and subsequently at Leeds University, Leeds, United Kingdom. He lived in the countryside of Scotland for over 45 years. He loved it there.

Ivan was a codiscoverer of the mid-Atlantic Ridge, and this was groundbreaking, so to speak. It supported other evidence coming in at the time for tectonic plates and seafloor spreading. This was, however, contrary to much of the thinking then (late 1940s). But Ivan loved ruffling feathers.

He was also the discoverer of T phases that were unnoticed by previous investigators of seismic records. We have all heard of P waves (primary arrivals) and S waves (secondary arrivals), but T phases were new observations seen only in underwater signals. He found them and proposed that they be used for tsunami warnings.

Tony Biot was a significant mentor and friend with whom Ivan learned much about elastic media, vector equations, Hamiltonians, elasticity, normal modes, porous media, and edge diffraction. They coauthored numerous papers, with Ivan paying tribute to Biot on his death by publishing a collection of Biot's works. Ivan's full list of his publications can be found on [www.ivantolstoy.com](http://www.ivantolstoy.com).

Ivan also discovered superresonances and investigated ideal wedge modes, atmospheric gravity waves, and rough surface boundary waves. He was an AAAS life member.

Ivan died on February 18, 2023, after a brief illness and would have been 100 on March 30, 2023. He retained an interest in science, art, music, and life up to the end.

He is survived by three daughters, each a scientist and the authors of this obituary, and a grandson.

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