

Remembering Erich Lehmann



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Erich L. Lehmann 1917-2009

Frankfurt family. Father very successful lawyer.
Discovered Fermat's little theorem at age 16:

$p \mid (a^p - a)$ for prime p ;

German literature vs math. : Landau's advice.

Family left Germany in 1933.

Finished high school, studied math. in Zürich and at Trinity College, Cambridge. Graduate math study at Berkeley starting 1941. Recruited by Neyman in 1942. Tarski. In 1944-45 on Guam with Joe Hodges. From 1945 in Berkeley.

E.L. Lehmann (2008). Reminiscences of a Statistician. The company I kept, Springer.

Teacher and friend of many.

Lehmann 1942: Statistics is a bunch of ad-hoc methods to solve messy problems based on arbitrary and questionable assumptions.

Lehmann 1959: Neyman-Pearson theory provides a framework, but a statistical theory course needs a textbook:

Testing Statistical Hypotheses (1959).

Landau's mansion vs Erich's car

Friendly and helpful for young people

Research: Two examples.

Lehmann alternatives.

Two sample rank test for $H_0:F=G$ against $H_1:G<F$

Standard shift alternative: $G(x)=F(x-\theta)$, $\theta>0$.

Lehmann alternative: $G(x)=K(F(x))$, K d.f., $K(v)<v$.

Distribution of rank test statistic depends only on K and easy to find (Hoeffding). Most powerful tests.

Deficiency (Hodges & Lehmann).

A.R.E. of T^* w.r.t. T equals N/N^* as $N\rightarrow\infty$

Deficiency of T^* w.r.t. T equals (N^*-N) as $N\rightarrow\infty$

Expansion for power $\pi_N = a + bN^{-1/2} + cN^{-1} + o(N^{-1})$

of both tests needed instead of limit $\pi_N \rightarrow a$.

Other activities and honors

Editor Annals (problems with Neyman)

President IMS (Durbin & Theil and European Meeting of Statisticians, Dublin 1963); Wald lecturer

Member National Academy of Sciences

Honorary doctorate in Leiden in 1985.

In Leiden he was the first mathematician to receive a Dr. h.c. since Thomas Stieltjes in 1884. Rector's problem.

Honorary doctorate in Chicago in 1990.

Letter February 11, 1985.

The week after he received an honorary doctorate at Leiden, Erich wrote:

“On the way back, I had one insight into the proceedings of last week. Could the purpose of this series of 10-course dinners be to dispose of the newly baked dr h.c.’s before they can do any damage to the reputation of the Acad. Lugd. Batav.?”

His letter continued in a more serious vein as he wrote about “the extraordinary, liberating effect” of the ceremony as follows:

“I grew up with great advantages and some serious disadvantages. The most important of the latter was the relationship with my father, a very outgoing, enormously successful lawyer who adored my equally outgoing, delightful and original younger brother, ..., but found little to admire in me who was shy, reserved and unadventurous.

... . He was always very nice to me, (but) he just made it clear that I was a bit disappointing and that he had no expectations of my ever amounting to anything. Over the years, the weight of his disapproval has lightened some, but it has remained with me until last week when I had it out with him (the poor man has been dead for 35 years). I challenged him: “Now admit that you were wrong. In my quiet boring way I did make it after all. Getting the only mathematical Dr h.c. from Leiden in the 20th century is as big a success as any man could wish for his son. So there!” And he admitted it.”

Letter January 21, 2009.

I lead the kind of life appropriate for my age: Taking pills, going to doctors and sleeping during the day as well as at night. So as not to be completely idle, I putter away at a new book: Fisher, Neyman and the creation of classical statistics. It is a story that I find not only scientifically interesting but also full of drama.

The letter continues in a more whimsical vein:

Last night you made an appearance in my dream. You introduced me to a colleague of yours who had a massive data set that she needed to analyze and you asked me to assist her in that enterprise. I reminded you that my facility with applied statistics parallels that attributed to my mother's intelligence by one of her teachers:

Dumm geboren,

Born stupid

Nichts dazu gelernt,

Learned nothing else

Und das noch vergessen

And forgot even that

(A true story)

But I said I'd do my best which I hope you appreciate

Further reading:

E.L. Lehmann (2008). Reminiscences of a Statistician. The Company I kept, Springer.

C. Reid (1982). Neyman from Life, Springer.

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