

MATHEMATICAL PERSPECTIVES

BULLETIN (New Series) OF THE
AMERICAN MATHEMATICAL SOCIETY
Volume 57, Number 4, October 2020, Pages 639–640
<https://doi.org/10.1090/bull/1704>
Article electronically published on July 6, 2020

ABOUT THE COVER: TRIBUTE TO ELIAS STEIN

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It is an honor to be asked to write about Eli Stein.

A long article in this issue of the *Bulletin of the AMS* gives some idea of the range, depth, and originality of Eli's fundamental contributions to mathematics. An article in preparation for the *Notices of the AMS* discusses his human side; Eli touched many lives. In these few paragraphs, I'll confine myself to a single favorite anecdote from my early years with Eli. Let me set the stage.

In 1967 Eli returned to Princeton from a year's leave at the University of Paris. He gave an inspiring graduate course on the topics that would later appear in his wonderful book *Singular integrals and differentiability properties of functions*. I followed that course as a second-year grad student, interested in analysis but otherwise without direction. Eli's course was a revelation to me. The topics were simple, elegant, and fundamental. The explanations were flawless and unforgettable.

I asked Eli to be my thesis advisor. He gave me three selections from his seemingly infinite collection of interesting open problems, and I've never looked back.

The relevant point for my anecdote is that Eli lectured with a style unlike that of any other mathematician I ever met. Many top researchers give clear, beautiful lectures; but Eli did more. Each Eli lecture began by posing a problem in the first few minutes. Eli then devoted almost the whole lecture to an explanation of how the problem fit into a bigger picture, and how to see the problem from exactly the right viewpoint. In the last few minutes he gave the complete solution to the problem at hand. Thanks to the preparation in the preceding 45 minutes, the solution was completely obvious. After the lecture it would have taken great effort to realize that only an hour before, the listener would have had no clue how the problem might be attacked.



FIGURE 1. CLEAR COPY OF THE COVER: Elias Stein, 1931–2018

My anecdote is set in the spring of 1970. The Vietnam war was raging, and the Princeton campus erupted in student protest. Angry undergraduates discovered that the Princeton math department was receiving financial support from the hated Department of Defense. They demanded an explanation.

Please bear in mind that at about the same time, Princeton's Institute for Defense Analyses was surrounded by student demonstrators, and a few months later the Math Research Center at the University of Wisconsin would be destroyed by a bomb.

Eli was then serving as the chairman of the Princeton math department, and he gave a public lecture on the department's budget in the common room of the then-new Fine Hall. He presented a complete, honest, dispassionate account of the math department budget for the academic year 1969–70. He made clear that DOD funding was not tied to military applications.

The students must have been satisfied, because there was no further incident at Fine Hall. I heard Eli's lecture on the budget with particular pleasure, because I recognized it as a quintessential Eli lecture. Eli spent almost the whole time placing the problem in context and explaining how to view it properly. The details fell into place in the last few minutes, and the math department budget was clear to all.

I hope these remarks will bring a smile to the face of anyone who has enjoyed the privilege of hearing Eli Stein explain mathematics.

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