

Saunders Mac Lane

Saunders Mac Lane, along with Eilenberg, introduced 'Category theory'. Category theory is now central not only in mathematics but also in mathematical physics and theoretical computer science.

Mac Lane graduated from Yale University in 1930 and joined the University of Chicago on a Fellowship. There, E H Moore persuaded Mac Lane to study at Göttingen, the Mecca of mathematics at that time. In Göttingen, he worked on his doctoral dissertation with the logician P Bernays but the Nazis who came to power at that time fired Bernays and others who had Jewish connections. Finally, Mac Lane defended his thesis 'Abbreviated proofs in the logical calculus' under the supervision of Hermann Weyl. Mac Lane has given a fascinating glimpse of his experiences during this turbulent period in an article 'Mathematics at Göttingen under the Nazis' written in the *Notices of the American Mathematical Society* in 1995. At one point he says that he saw Hitler and Goring in close proximity to him during the intermission of a musical opera and that, had he carried a weapon, he "might have personally changed history"!

The collaboration of Mac Lane with Samuel Eilenberg gave rise to the subject of category theory and their methods led to what came to be known later as homological algebra; both of these have proved highly influential in several branches of mathematics. In their first collaborative paper, the words 'category' and 'functor' were introduced; according to Mac Lane, the first was 'purloined' from Kant and the second from Carnap.

The classical textbook *A Survey of Modern Algebra* was written by Mac Lane jointly with Garrett Birkhoff in 1941 when both were young (and not yet tenured) assistant professors. As Mac Lane mentions in his article 'Samuel Eilenberg and Categories' in the *Journal of Pure and Applied Algebra* in 2002, some mathematicians predicted then that the book "would not fly beyond the Charles river." However, this text became, for many years, the most popular one for teaching an undergraduate course in algebra. This was the first book in algebra to emphasize an axiomatic treatment where abstract ideas and concrete examples were wonderfully balanced. It set the tone for later books on algebra. I Kaplansky once wrote, "the impact of Birkhoff and Mac Lane's book on the content and teaching of algebra in colleges and universities was immediate and long sustained." In this issue, there is a nice and elementary introduction to co-homology theory by R Sridharan, who was one of Eilenberg's students.

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