
Ralph L. Cohen

Dr. Ralph Cohen received his PhD in 1978 from Brandeis University under the supervision of Edgar H. Brown. He has been a professor in Stanford University since 1987. He was chair of the mathematics department from 1992 to 1995, from 1999 to 2009 he was director of the Mathematics Research Center at Stanford, and from 2010 to 2016 was the Senior Associate Dean for the Natural Sciences in the School of Humanities and Sciences. His research interests include algebraic topology and differential topology.

In 1982, Cohen was a Sloan Fellow. In 1983 he was an invited speaker at the International Congress of Mathematicians in Warsaw. In 1984 he received the Presidential Young Investigator Award. In 1988 he received an NSF International Award, in 2010 he served on the Executive Committee of the American Mathematical Society, and in 2012 he was elected a Fellow of the American Mathematical Society. He is currently the Barbara Kimball Browning Professor of Mathematics at Stanford.

I first heard of S.-T. Yau when I was a graduate student in the mid to late 1970s. I heard that a young Chinese mathematician at Stanford University had solved an important conjecture by Calabi in Differential Geometry. Moreover he made dramatic use of partial differential equations in that solution. I heard that, besides solving an important conjecture, his methods started a brand new field, “Geometric Analysis” that completely revitalized the field of Differential Geometry. His proof brought together methods from topology, differential equations, as well as both differential and algebraic geometry. I was a topology student at the time, and my heroes were people like Milnor, Atiyah, Thom, Smale, Whitehead, and Adams. But I learned a fair bit of differential geometry, and I was intrigued by the coalescence of the various areas of mathematics that Yau’s solution to the Calabi conjecture brought to the fore. I was anxious to learn more.

I got my chance when I came to Stanford as a new assistant professor in 1980. Peter Li, another new assistant professor, and I quickly became friends. He was a student of Chern, but he was clearly influenced in all aspects of his mathematical training by Yau. I believe that Yau was still technically a member of the Stanford faculty when I arrived, but he wasn’t there at the time, and I never had the opportunity to overlap with him at Stanford. But I certainly learned more and more about his influence in the fields of geometric analysis and differential geometry and I was deeply impressed at how his methods and approach influenced other young geometers such as Schoen, Simon, Uhlenbeck, and Hamilton (among others) to tremendous success. I remember that Li and I studied the work of Hamilton in the early 1980s and my feeling of being so impressed at how the techniques of analysis and geometry inspired by Yau, had such an impact on so many areas of topology and geometry.

I got to know Yau personally through my colleagues at Stanford: first Li, and then Schoen and Simon. I always found him to be a humorous, impressive personality with an obviously powerful intellect, and a great personal drive. We became friends on a personal level. I remember years later, when my daughter was applying to go to college at both Harvard and MIT, we came for a visit to Cambridge, and Yau had us over for dinner. He also invited an eminent biologist from Harvard, and my daughter was absolutely star struck—meeting such eminent scientists on a personal level. My daughter eventually went to MIT for her undergraduate work, came back to Stanford for her graduate studies, and did her postdoctoral work back at Harvard. I am very proud to say that she has become a successful neuroscientist, and I always felt that the evening at the Yau’s home, talking about science and the research going on at Harvard and MIT, had a huge influence on my daughter, and I will always be grateful to Yau for that.

I have been proud to call Yau my friend over the years. When I was chair of the math department at

Stanford I started a “Distinguished Visiting Lecturer” series, which has become quite successful and still exists. Yau was our first distinguished lecturer. His lectures were terrific and inspiring. I personally became very interested in string theory and quantum field theory, and in my own research I’ve studied topological aspects of these physical theories. But to hear Yau lecture about string theory and the role of Calabi-Yau manifolds was inspiring to me mathematically, even though I worked in a different field.

In more recent years I was the Senior Associate Dean for the Natural Sciences at Stanford. In that capacity I had the opportunity to work with Yau on a number of different projects. These included Yau’s high school math competitions in China, a joint agreement between Tsinghua University and Stanford University for cooperation in mathematical research and education, and several development efforts aimed at

supporting Chinese students who want to study at Stanford and other American universities. It never ceased to amaze me that a mathematician of Yau’s caliber, truly one of the very best in the world, had the time and energy to work on these projects. That realization inspired me then, and continues to inspire me.

It is hard for me to believe that Yau has reached the age of 70 years. I always used to think that 70 is the age of a genuinely old person. Now that I am 66 years old myself, I no longer think that. Moreover, to see Yau, one of the great mathematicians of the last 50 years, reach that milestone without slowing down, shows me that at least in Yau’s case, age may bring wisdom and understanding, but it does not diminish a great intellect. I wish him all the best on this occasion, and I know that this is just one of many milestones that Yau will reach in his many years to come.