

# Recollections of Shoshichi Kobayashi

by Joseph A. Wolf

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I met Shoshichi Kobayashi when we both arrived at Berkeley in September of 1962. We got to know each other quite well for two reasons. First, the differential geometry group at Berkeley, just then forming under Prof. Chern's guidance, was very cohesive, both socially and mathematically. Second, we shared an office, where we had many informal conversations about differential geometry, mathematics in general, and academic life. I always learned some interesting mathematics when Sho and I talked. Years before, I had read Prof. Nomizu's short paperback *Lie Groups and Differential Geometry*, and I was thrilled to learn that Shoshichi had just completed his monumental work on differential geometry with Nomizu.

At various times during the 1960's the geometry group at Berkeley included S.-S. Chern, Sho Kobayashi, Phil Griffiths, Jim Simons, Gary Jensen, Alfred Gray, Peter Gilkey, Jeff Cheeger, Blaine Lawson, Nolan Wallach, Manfredo do Carmo, Wu-Yi Hsiang, Hung-Hsi Wu, myself, and many others. It was very collaborative and did not draw distinctions between big shots, young academics, and graduate students. And there were many famous and influential visitors attracted by Chern, including Gene Calabi and Fritz Hirzebruch. So it was a kind of mathematical heaven. During this time Shoshichi constructed his pseudo-metric, with the associated notion of Kobayashi hyperbolicity, and also his reproducing kernel methods for irreducibility of unitary representations.

In the 1970's and 80's the mathematical interests of the members of the geometry group at Berkeley diverged. Chern went more into topology and analysis, and then into Finsler geometry. Sho moved more to complex analysis and complex algebraic geometry. Hung-Hsi concentrated on potential theory and later moved to mathematical education. Wu-Yi worked in transformation group theory. I concentrated more on Lie groups and harmonic analysis.

When the building that currently houses the math department (Evans Hall) was built, math was to have floors 7, 8, 9 and 10. Sho and I went into the building to choose our offices before the elevators were installed. We walked up the stairs together and at some point I realized that he was speeding up. I couldn't keep pace, but he had to stop at the 7th floor and I managed to get to the 8th. So his new office was on the 7th floor and mine was on the 8th.

Later, when Sho was math department chair, the chancellor's office informed him that we were losing our space on the 7th floor. With Sho in charge we came out of these "space wars" pretty well, retaining most of the 7th floor.

Throughout the 1960's and 1970's the geometry and topology groups were very social with frequent large parties featuring food and conversation. My wife and I spent a number of evenings with Grace and Sho, both at their house and ours, and we all became good friends.

When Sho and I retired in 1994, spouses had to sign agreement on certain pension arrangements. Grace held out for a promise that Sho would not just stay at home and ask "what's for lunch?" I never knew how serious this was, but after he retired Sho usually came to the department in the afternoon.

For some years the NSF had helped Sho and myself with a joint research grant. But as our research areas diverged, Ralph Krause, then the NSF program director for differential geometry, had more and more trouble finding referees for our research proposals. He informed us that Sho and I were "getting a divorce", in other words separate research grants, and I was to move from differential geometry to modern analysis. This was a bit ironic since, at that time, I was using Shoshichi's reproducing kernel methods for geometric realization of discrete series representations, the basic constituents of harmonic analysis on real semisimple Lie groups. In fact it became even more ironic later, in the period 1995-2005, when Kobayashi hyperbolicity turned out to be critical for the theory of cycle spaces of flag domains.

It is hard to realize that Sho is no longer with us. Of course we knew that trouble was coming when he first had coronary problems on a visit to Japan. After that he no longer seemed so energetic, but still his passing was a bad surprise. It was a great privilege to have been a friend and colleague of Shoshichi Kobayashi.

— Joseph Wolf, Berkeley, September 2013