Japan, Fall 2008

Dynamics Days Asia Pacific #5, Nara, September 9-12

Mizuho Bank and RIKEN Complexity Day, Tokyo, Sept. 16

Ralph Abraham, September 27, 2008



Ralph and Yoshi, 2004



Yoshi and Ralph, 2005

MY HISTORY IN JAPAN

As far as I can remember, my first visit to Japan was in 1984. I had admired the work of Chihiro Hayashi, professor of electrical engineering at Kyoto University, and wanted to meet him before he was too old. I wrote to him in 1983 and he invited me to visit him in Kyoto. I prepared for a visit in Spring 1984. My friend Harry Edwards had been to Japan many times on business, and he advised me that two things were mandatory for my visit: a business suit and business cards. I bought a suit and had some cards printed and set off for Kyoto. Changing planes at Paris Charles de Gaul airport, the suit and its garment bag were stolen while I spoke on the phone, but the cards survived the trip and were indeed useful. Changing planes again at Tokyo Haneda airport (Narita did not yet exist) my progress was arrested, as the airport was closed by a political protest. I managed to find a room at the To-kyo YMCA, and took the Shinkansen next day to Kyoto. Professor Hayashi had reserved a room for me at a very nice hotel, and came there to meet me the next morning. He had arranged several lectures, and drove me around rapidly from one venue to another. At his office in Kyoto, I met two of his best former students, Yoshisuke Ueda and Hiroshi Kawakami.

Yoshi had by then been acknowledged as a pioneer of chaos theory. He had published his pioneering work of 1961 in 1978, and had presented his work at the New York Academy of Science Chaos Conference (NYAS) in 1979. It was he who next invited me to Kyoto, and I began visiting him regularly there in 1993, sometimes along with Bruce Stewart, a chaos theorist then at Brookhaven National Lab on Long Island who had met Yoshi in 1986.. We three became fast friends, and together experienced the rise and fall of a wave of popularity of chaos theory. My visit in the Winter of 1995 coincided with the Kobe earthquake, when my lecture at the Kansai Electric Power Company had to be canceled as the building had collapsed. In 1998 we decided to publish a book on the early history of chaos theory, *The Chaos Avant-garde*, in which more of our story may be found.

Yoshi and are the same age, and retired at about the same time. He then moved to the Future University of Hakodate (Hokkaido), and I twice visited him there, in 2004 and 2005, with support of a Fulbright Fellowship. Since those visits I have been studying Japanese, and this 2008 visit would be my first opportunity to experience Japan with a little familiarity with the language. So I spent four days in Nara for the Dynamics Days conference and four in Tokyo for the RIKEN complexity event, all as the guest of RIKEN, a national research institute for chemical and biological science. I had never seen Nara before, nor Tokyo, so this was quite an adventure, from which I have just returned.

DDAP5 HISTORY

It was around 1971 that a paper on chaos and turbulence by Ruelle and Takens awoke the physics community to the joys of chaos theory. The NYAS conference in Manhattan in 1979 was a further manifestation of the chaos revolution in the sciences, and in 1981 there was a chaos summer school in Les Houches (near Chamonix, France) where many physicists got their start in the new direction. At that meeting I projected some of the earliest computer graphics images of chaotic attractors and bifurcations. This led to the first of the Dynamics Days annual conferences in the USA and Europe, ongoing ever since. In 1999 Asia followed suit, and DDAP was born. DDAP5 is the fifth in the Asian sequence, the prior events having been held in Hong Kong, China, Singapore, and Korea.

ARRIVAL IN NARA AND DDAP5

From Kansai International Airport (KIX), after a 12-hour flight from San Francisco and validating my Japan Rail Pass at the KIX train station, I boarded the Haruka Express, disembarking at Tennoji instead of riding all the way to Kyoto as usual. To find my connecting train in Tennoji, a local to Nara, I had to resort to broken Japanese for the first time. It worked! A further linguistic experiment helped find my hotel in Nara, and (the following morning) the bus stop for the conference center. Nara was the first capital of Japan (from 710 AD) and has some splendid temples and shrines, although not as many as Kyoto. But its most interesting feature, to me, was a large park crowded with tame deer, among which was our conference venue. On the schedule there were plenary talks with the full audience of 200+ participants, invited talks in three parallel sessions, contributed talks also in sessions, and one poster session. I was to give an invited talk on the fourth and final day. Yoshi was to give an historical presentation at the banquet. We got to hang out together throughout the conference.

There were nine plenary talks, 66 invited talks, and 66 contributed talks. I listened to about 20 of the talks, and found most of them very applied, but on a high-level of chaos literacy. About half of the speakers were from Japan, half from other Asian countries, a few from Europe, and two from the US. As to topics, there were about 21 topic-oriented sessions on biology (5 sessions), networks (3), ensembles of oscillators (2), brain science (2), quantum mechanics (2), classical mechanics (1), lasers (2), physics (4), and also several talks on cell phone technology, economics, and other subjects, spread about.

Overall, I was impressed that a chaos renaissance is underway in Asia, and I was pleased to meet several people who were acquainted with my books. About 80 people attended my talk on the seemingly forgotten pure math of dynamical systems theory of the 1960s, especially global bifurcations, structural instability, and the unpredictability of complex dynamical models.

ON TO TOKYO

After the conclusion of DDAP5 on Friday I had a day off in Nara. Typhoon Sinlaku was approaching from the South, and I walked for hours in the 100+ degree heat and 100% humidity. I was looking for a vegetarian restaurant Indian restaurant called Ragmala that I had discovered with Google. It was wonderful. On Sunday I utilized my limited Japanese again to find my way from Nara to Kyoto on an express train, and on to Tokyo on the Shinkansen (bullet train). This went smoothly, and took about five hours door-to-door. At my new hotel near Tokyo Station I found Ken Umeno, my host from RIKEN, waiting for me. This was mid-afternoon on Sunday. We went for a walk around the Yaesu neighborhood and I was delighted to find it very pleasant, reminding me of Greenwich Village, the Italian town in New York City where I had lived during my tenure at Columbia University, 1962-64. I learned from Ken that RIKEN was among the largest science establishments in the world, including his small research group devoted to chaos applied to cell phone technology. This group was working with the Mizuho Bank of Tokyo, a megabank, to promote the application of ideas from the mathematical theories of chaos and complexity to the economics and politics of Asia, and that this was the focus of the upcoming conference and my talk on Tuesday. I was told that the audience would consist primarily of bank executives, and I should give a nontechnical talk. Everybody seemed to be looking for a new pan-Asian direction of cooperation.

Well, miraculously, I had heard from Monty Montuori of the California Institute of Integral Studies in San Francisco, just before leaving home for Japan, that he had edited a new book of translations of essays on complexity by Edgar Morin, the contemporary French philosopher. I had bought this book to keep me happy during the long flight, and had read most of it on the plane. This book is a difficult read, as they say, and I was thrilled by the level of discourse and the novelty of Morin's ideas. The 40 page introduction by Monty was a great help in understanding Morin's ideas, and altogether, this was exactly what seemed to be wanted by RIKEN and the Mizuho Bank people for their conference. So I spoke to the general audience on Morin's ideas, and Peter Davis (a bilingual chaos scientist) gave a simultaneous translation in Japanese. This seemed to be greatly appreciated, and I resolved to read and study further of Edgar Morin.

Around this one day of work I had two free days, and got to hang out in Tokyo with Yoshi and a joint friend, Dr. Kiyoshi Takizawa, before heading home.