

Forming Friendship through Collaborative Research



John E. Bolander is a professor within the Department of Civil and Environmental Engineering at the University of California, Davis. He received his Ph.D. degree in civil engineering from the University of Michigan, Ann Arbor, in 1989. He belonged to the faculty of engineering at Kyushu University for five years prior to arriving at UC Davis in 1994.

At the start of this note, I would like to express my sincere gratitude to Professor Emeritus H. Hikosaka of Kyushu University. It is through him, and by his kind guidance, that my academic relationships with Japan were developed. As a research associate, Kajima Fellowship recipient and later as a faculty member at Kyushu University (from 1989 to 1994 in total), I had the privilege to work with both undergraduate and graduate students on research related to concrete materials and structures. I recall the students' bright enthusiasm toward all sorts of topics, ranging from fundamental research to practical applications. At that time, several of our projects involved the use of machine intelligence for nondestructive evaluation of concrete or optimizing material distribution within concrete structures. As a member of the Hikosaka lab, I participated in regional, national, and specialty conferences through which I could learn about research trends and meet Japanese researchers. The lab members worked together and traveled together (e.g., for *bonen kai*), which is something that I dearly miss.

After a five-year term at Kyushu University, I came to the University of California, Davis, as an assistant professor. From the very start, I benefited from continued collaborations with Kyushu University. In particular, several students of the Hikosaka lab came to California to work on their research projects. This set of students (Y. Kobashi, S. Saito, and K. Yoshitake) resided with my family or, I should say, became members of my family. Indeed, they helped raise my elder daughter. The good times we had together formed lasting memories and helped ease the stresses of being an assistant professor. From a different viewpoint, however, perhaps they felt like prisoners, since there was little escape from computer programming and running analyses. They were also subjected to eating large baked potatoes and other foreign foods.



Figure 1 – Visiting scholar S. Saito with daughter Sarah at Yosemite National Park (1996)

These were times of much excitement. In the mid-1990s, the field of concrete modeling was vibrant and we were proposing the use of rigid-body-spring models, based on the pioneering research of Dr. Kawai and colleagues, for that purpose. Our use of discrete, random arrangements of simple elements, akin to the lattice models of that day, was in contrast to the prevailing use of continuum finite elements. Since then, the choice between discrete versus continuum approaches has remained fertile grounds for discussion. This research extended to the modeling of reinforcement within the rigid-body-spring models, which is essential for most applications of structural concrete. Our work on modeling short fiber reinforcement, as well, originated during this period. None of this would have been possible without the collaborations with this set of students from Kyushu University and Japanese colleagues that visited later. In addition, I have benefited from the support and key contributions of Drs. D. Asahina, T. Saka, and S. Ichimaru, who received their PhD degrees with me at UC Davis.

My family and I were given opportunities to live in Japan through two generous fellowship awards from the JSPS, first in the summer of 1997 with Prof. Hikosaka as host at Kyushu University, and then in the summer of 2008 with Profs. Kunieda and Nakamura as hosts at Nagoya University. The visit to Nagoya University included a conference, held on the campus, devoted to rigid-body-spring models. In particular, the conference honored the originator of the rigid-body-spring concept, Prof. Kawai, who was in attendance. It was special to meet him and many Japanese colleagues interested in the subject matter. The two long-term stays were exceptional not only for their academic opportunities, but also for the growth of my family, including our second daughter in the latter stay. Those experiences of daily life in Japan, together as a family - and the many shared experiences with Japanese

visiting us in California - have been influential in forming our characters and deepening our love for Japan.

In recent times, I have conducted several summer abroad programs for University of California students in Japan. More specifically, for each of the summers over the period 2015 to 2018, about 20 undergraduate students took UC-approved coursework in Japan. Our activities were at first Tokyo centric, based at Tokyo University of Agriculture and Technology. The students were treated to tours of the research laboratories at Shimizu Institute of Technology and Kajima Technical Research Institute. In the latter two years the students also greatly benefitted from stays at Kyushu Institute of Technology and Gifu University. The UC students and students at Kyutech enjoyed field trips and week-long collaborations to develop and make presentations on the subject of sustainability of the built environment. This form of integration with students of the host university was a joy to see. I would like to take this opportunity to thank all who supported those summer abroad programs. When I meet students who participated in one of the programs, they invariably tell me it has been a positive, life-changing experience.



Figure 2 – In Kyoto with UC students during the 2017 Summer Abroad Program

The University setting offers unique opportunities for shaping the next generations of life-long learners and gathering peoples of different backgrounds to learn and grow together. The degree to which this happens depends largely on the guiding influences of dedicated faculty members, who oversee much of the learning and research activities. All too often, however, faculty members are not sufficiently rewarded for student mentoring or contributing to societal needs. Reward structures tend to favor research grants and publication counts, partly because they are more easily quantifiable. In a similar vein of thought, the growing emphasis on department or university rankings, as determined

through various metrics, may be leading us astray from what should be fundamental goals of the university, including quality teaching and mentoring. Such fundamental goals seem all the more important in these times of increasing tuition costs.

As a related matter, open time (e.g., time for creative thought and student mentoring) has become an increasingly precious resource in modern academic life. It is hard to identify any predominant reason for the scarcity of open time. Rather, the negative impact seems come from the growing, often complex responsibilities placed on faculty members both by administrative structures within the university, and obligations to various academic communities and oversight agencies outside the university. From 2013 to 2015, I represented our campus on the UC system-wide committee on graduate student affairs. One of the committee's charges is to monitor and make recommendations on graduate student education and wellbeing. In my opinion, quality time for mentoring students is a basic requirement for quality in graduate level education, and university education in general. The need for quality time is especially important in this information age, where distractions abound and there seems to be a continual competition for attention.

I admire many aspects of our students, one of them being their desire to make world a better place. The hard and soft skills acquired through university life can be instrumental in accomplishing such noble goals, in addition to personal fulfillment. On this front, I encourage study abroad, even for short periods of time.



Figure 3 – In Napa Valley with Professor Naito (December, 2017)

Since leaving Japan, my family and I have been in Northern California for over 25 years. The first many years were absorbed by university life. At times, I was a poor host. Now we are more actively studying the cultural and outdoor activities offered by our surroundings. Please consider coming not only for a research visit, but also so we can explore Northern California together.