

# Presidential Address

## The 50th Anniversary of System Dynamics

*Qifan Wang*

August 1, 2007

I am honored to talk to all of you as the 2007 President of the System Dynamics Society.

In the past 50 years, System Dynamics has made many contributions, theoretical and practical, applicable to the whole world. In the early days, the main applications of System Dynamics were in industry: fluctuation of production and employment, disequilibrium in markets and corporate growth to name just a few. Since the late 1960s, however, System Dynamics has become widely known for its important contributions to social and economic research with the work in urban and global dynamics, especially the *Limits to Growth*, reaching a very wide ranging audience. By looking at the program for this conference it is clear that this breadth of work continues.

In brief, System Dynamics has made and will make valuable contributions to the development of human society. System Dynamics has become a mainstream method for the investigation of complex socio-economic systems and has great potential to contribute to social, economic and managerial research. System Dynamics has also shown its value in the educational process, from primary school through graduate studies, providing more people with the ability to think coherently about the complex dynamic problems that we face. Finally, System Dynamics has an important place and, and should continue contribute to, the study of the sciences of complexity.

While System Dynamics is important to society, it is also important to me and I would like to say a few words about why I chose to study this subject at MIT and what System Dynamics means to me. First why I chose MIT: This can be traced back more than 100 years ago; an uncle of my mother had studied abroad with the support of China's Qing Dynasty government. He went to MIT for undergraduate and graduate studies coming back to China at the age of 24 where he became a professor at the former Shanghai Jiao Tong University. When I was 4 or 5, my mother started to tell me all about him. From then on, I wished to study at these two places. This was not to happen for many years. I attended Tsinghua University in Beijing and then taught there for 21 years. It was not until 1979 that I transferred to a University in Shanghai, though not Shanghai Jiao Tong. Happily, however, I did get a chance to go to the Sloan School of Management at MIT as a visiting scholar.

I had majored in Automation at Tsinghua University, which is based on feedback theory. This is why and how I connected with the System Dynamics Group at MIT and became part of that group in 1983.

There are a number of unforgettable memories of Jay Forrester during my System Dynamics career. When I was at MIT, he and I chatted a little on a summer day in 1983. Forrester told me that he had initiated and studied System Dynamics for 27 years and that he planned to study it for another 27 years. He was already 64 years old at that time. I was deeply moved by his words. It was very inspiring and encouraging. After MIT I returned to China, and since then my entire career has been devoted to the development of System Dynamics in China. In the late 70's, Forrester started to introduce System Dynamics to high school education. I tried to do the same in Shanghai. Unfortunately, my ideas were rejected with variety of objections, which disappointed me a lot. Later, I was very pleased to learn that some scholars in Nanjing successfully included System Dynamics in high school courses. At the 2005 Boston Conference, I introduced the Nanjing delegation to Prof. Forrester for his advice. He told us that System Dynamics should be spread to kindergarten. I was startled by this point of view. Forrester is relentless in his desire to spread the field and I believe this idea will become important for System Dynamics in the future. Kids will be cultivated to be more creative from the very beginning, which will contribute a lot to improving their abilities and problem solving capacity.

Having said all the good things about System Dynamics, still we have to look for weaknesses and areas for improvement, such as the unbalanced geographical development and regional discrepancies. Starting in 2005, we have organized a regional conference once every other year in Asia Pacific. This conference provides opportunities for scholars in developing countries and areas to exchange their ideas. At present, many researchers in developing countries can not afford to attend the international conference in the US or Europe. At a rough calculation, an air-ticket from East Asia to the US or Europe costs around \$2000, accommodation costs around \$600 (\$120 per day for 5 days), Together with expenses of registration, visa application and inner-city transportation, the total expenditure reaches about \$3000. With limited funding, many scholars and students have to give up the trip. Regional conferences can be closer, easier to arrange travel to and have local expenses more in line with the norms for the region - very significantly reducing barriers to attendance. Regional conferences are also an important mechanism for System Dynamics to change from being mainly in US and Europe to being in every continent. Regional conferences are now happening regularly in the Asia-Pacific and Latin America and hopefully we can work out a feasible strategy to have even more of them.

Here, I am delighted to announce that we have established a planning team to look key initiative in the next 50 years of System Dynamics. Prof. Joel Rahn is heading the team (Ms. Deborah Campbell, Prof. Henk A. Akkermans and Prof. Yutaka Takahashi) and I hope we will have some concrete recommendations to make by the end of this

year. After that, we would like to collect detailed implementation measures from all of you, by means of internet, conferences and so on. We look forward to your support and suggestions!

Finally, I'd like to give a few comments on the relationship of System Dynamics and World Civilization. Currently, there are 7~8 kinds of dominant political structures in this world which, along with the counties that embody them, will conflict and compete among one another. Many scholars believe that conflict of political structures can only lead to the conflict of culture, and even war. I do not believe this is true. System Dynamics, being fundamentally neutral with respect to political structure, is able to support the peaceful synthesis, cooperative development and coordination of all civilizations and political structures. Ever since the late 1970s China has been opening its interactions and reforming its policies as it strives for prosperity, equity and civility. Hopefully, Sino Civilization will evolve to be recognized as belonging to the world's excellent civilizations in the future. I hope System Dynamics and our Society can contribute to the peaceful development of civilizations and political structures around the world, including both developed and developing countries and areas.