

Teaching “Game Theory” in Shanxi: A Teaching Trip Report

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This teaching trip to China in November 2002 was sponsored by the OYCF (Overseas Young Chinese Forum) Teaching Fellowship program.

I. Preparation

The course we proposed to teach was “Game Theory and the Social Sciences.” In September 2002, we prepared the syllabus. The course was designed as a series of nine lectures on basic concepts in game theory and their applications in social sciences such as economics, political science, and sociology. Each lecture was designed to run for two hours. The syllabus also specified reading materials.

Next we prepared the lecture notes. The notes covered all the important materials and were to be distributed as the primary reading material to the students so they didn’t have to take notes during class. We would prefer the students to focus on the lectures.

Our host university is Shanxi University of Finance and Economics (SUFU), located in Taiyuan, capital of Shanxi Province. OYCF’s previous teaching trips were all destined for Renmin University at Beijing, so SUFU represented a new territory. Our family members in Shanxi helped to establish the connections with this university.

Not surprisingly, before we approached SUFU, they knew nothing about OYCF and its teaching fellowship program. Though there are introductory materials on the OYCF website, but they are all in English therefore not very useful in helping facilitating communicating with people in China. To convince SUFU that we were serious, we prepared in Chinese a brief introduction about OYCF and the fellowship program and sent them to SUFU with the course syllabus. SUFU soon agreed to host our teaching trip.

In early October 2002, we started to talk with SUFU about the details of the arrangement when we finalized the travel itinerary. However, we found the communication was sometimes difficult and frustrating. It seemed that, after had left China for so long, we were no longer used to the way people in China make decisions. Relying on family members to transfer messages also complicated the communication process. Misunderstandings arose. The fact that we offered to teach for free might have caused our host to question our true motive. They also seemed, understandably, to have concerns about the possibility that we might give casual comments on sensitive issues.

The communication regarding the teaching schedule ended up not very productive. Consequently, we got on the plane without knowing exactly who would be our audience

and what was our exact schedule at SUFE. But we believed that all would be worked out once we could talk to the people at SUFE face to face. And we were right.

II. Teaching

We arrived in Beijing on November 10, 2002. And arrived Taiyuan by bus on the late night of November 12. We lived with Xue Song's parents in Taiyuan.

At 8am in the morning of November 13, we discussed our teaching schedule with Dr. Fuchun Zhang, associate dean of the graduate school at SUFE. Dr. Zhang stated their intention to get as many students as possible into our class. He also asked about the possibility of delivering the same lecture twice on two campuses, but unfortunately we wouldn't be able to do that due to our tight schedule. As hoped, both sides were able to come to an agreement quickly: we would restructure the course into a series of 6 lectures, 3 hours each, and deliver it to first-year graduate students in economics and management within the next 6 working days.

These students were taking a "Western Economics" course, which would cover an introduction to game theory. The lecturer of this course, Professor Hongmei Zhao, and Dr. Fuchun Zhang would like to incorporate our lectures into this course. If so, Professor Zhao would skip the game theory part but would test students using the materials that we would teach. Therefore we would not need to give a separate exam.

The first lecture started at 9am on November 13. The subsequent lectures were moved to 2:30pm to 5:30pm from the next day. It was a very big class. About 80 students closely followed our lectures. After each lecture, we stayed for another hour to interact with the students. In addition to game theory and economics in general, many students were curious about everyday life in the U.S. They were also eager to know how one could go to the U.S. to study economics. It was great fun to talk to them.

Our course was organized as follows. The first lecture introduced basic concepts in game theory started with the history of game theory and why economists wanted to study game theory. Students were all interested in life stories of the legendary John Nash and John Von Neumann. We then gave a very detailed introduction to the ideas of "game" and "Nash equilibrium."

The second lecture introduced the concepts of normal form game, extensive form game, subgame perfect equilibrium, backward induction, etc. We used many examples to help students understand those concepts. We also organized students to play some games in the class, including the prisoners' dilemma, the ultimatum game, the Vickery auction, and the one-dollar auction.

We discussed applications of game theory in economics in the third lecture. We covered the Hotelling model, the Cournot model, the Stackelberg model, the Bertrand Model, the Vickery auction, and the asymmetric information models.

The fourth lecture discussed applications of game theory in political science. We revisited the prisoners' dilemma and gave a detailed account of the Axelrod tournament and the "Tit-For-Tat" strategy. We also talked about the voting rules, Arrow's Impossibility Theorem, and the apportionment of congressional seats in the U.S.

The fifth lecture covered basic concepts in cooperative games, such as the core, the Shapley value, and the Nash bargaining solution. We also discussed the applications of cooperative game theory in cost allocation.

The sixth and last lecture introduced basic concepts in evolutionary game theory, such as evolutionarily stable strategy and stochastically stable state. We then discussed how those concepts could be applied to analyze social problems such as the formation of conventions, cultural evolution, and the emergence and persistence of residential segregation.

The course was a hit. The students welcomed all the lectures. In the last class, we asked the students to evaluate the course. Their responses were quite encouraging. They thought the lecture series was interesting and informative. They also liked our teaching style that encouraged student participation and interaction in class. Some students thought the tight schedule was intensive, although manageable. Many of them also offered thoughtful comments that would be helpful for OYCF to better organize its teaching program.

One thing that surprised us was the rapid advancement of teaching technologies on campuses in China. Although we created an electronic version of our lecture notes, we were fully prepared to use chalks and blackboards. However, we found that PowerPoint slides, digital projectors, laser pointers, and laptop computers were used extensively by college professors. We were quite old-fashioned compared to them. At the beginning, we were using color markers and a board. Only after the students urged us several times, we shifted to the digital projector. It was more efficient indeed.

III. Seminars

In addition to the course at SUFE, Junfu Zhang spoke at two seminars. On November 11, the second day after we arrived in Beijing, Junfu gave a talk at the China Center of Economic Research at Beijing University. At the talk, Junfu discussed his dissertation "An Evolutionary Approach to Residential Segregation," which applies evolutionary game theory to explain the dynamics of racial housing segregation in the U.S. In the audience there were faculty members and graduate students. The discussion continued when we went to dinner with two faculty members and a graduate student after the seminar.

On November 30, the day before we left for the U.S., Junfu spoke to a small audience at the Shanghai Institute of Law and Economics (SILE), a newly established non-government research institute based in Beijing. The topic was "Lessons from Silicon Valley." Junfu shared his research on the development of Silicon Valley, its unique

culture of innovation and entrepreneurship, and the lessons China can learn from Silicon Valley in managing its own high-tech economy. Most people in the audience were government employees in relevant fields. After the seminar, we had lunch with Zhiping Liang, the director of SILE, and an assistant director Wei Liu.

IV Suggestions

Since we were the first group on an OYCF teaching fellowship, what we learned from our experience might be helpful for the OYCF teaching fellowship committee.

- (1) It will be very helpful if OYCF produces, in Chinese, an official introduction to OYCF and its Teaching Fellowship Program. It will help fellowship applicants to explain to potential host universities what the program is about.
- (2) Some of the items on the “checklist” for fellowship recipients may be optional, such as, to test the students. The decision should be made based on the conditions and needs of the host university. Furthermore, in the future, it will be good to show the checklist to all potential applicants BEFORE they submit their applications so they can have some of the guidelines in mind when they contact host universities.
- (3) Most Chinese students in the U.S. come from big cities in coastal provinces in China, and they naturally tend to go back to their hometowns or alma mater to teach courses. We think it will be a good idea for OYCF to explicitly encourage fellowship applicants to go to the west and smaller universities where their expertise is more needed.
- (4) OYCF may consider advertising its teaching program inside China. On the one hand, a good public image may invite universities to come to us seeking cooperative opportunities; on the other hand, it may also help to expand OYCF’s fund-raising activities back in China.

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