Human resources development through collaboration between industry and academia

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From a vicious cycle to a virtuous cycle for philosophiae doctors

In early 2006, I made a proposition of "from a vicious cycle to a virtuous cycle for philosophiae doctors" (as indicated in the following diagrams) at the Noyori Forum as well as in the Doctoral Course Study Panel of Nippon Keidanren (Japan Business Federation). Based on this point of view, I have been involved in human resources development through collaboration between industry and academia. It is important for industry and academia to collaboratively make concrete efforts toward realizing the virtuous cycle. Although the financial support environment has not yet been sufficiently prepared, I would like the best and brightest students to go on to the doctoral course, earn their degrees through friendly competition, and then enjoy their flourishing careers. If they can follow such a successful path, I believe that the development will activate universities and drive companies, and as a whole lead to enhancement of the nation’s international competitiveness.

Attempts toward the virtuous cycle

Fewer and fewer undergraduate students wish to go on to the doctoral course, because of postdoctoral problems in addition to the above-mentioned vicious cycle. It seems that this vicious cycle has not yet stopped, but at this juncture it would be better to expose these problems to the fullest extent. Meanwhile, plenty of measures (such as the Global COE Program, the Diversified Career Path Promotion Project, and the Innovation Creation & Young Human Resources Development Project) have been undertaken by universities, industry, and academia. Moreover, some universities with a sense of crisis have decided on the relevant tuition waiver for the doctoral course. Member organizations and individuals of the Industry-Academia Partnership for Human Resources Development, which falls under the joint jurisdiction of the Ministry of Economy, Trade and Industry and the Ministry of Education, Culture, Sports, Science and Technology, also have been eagerly debating this issue with great interest in the doctoral courses. The following were cited as good practices at the fourth general assembly of the above-mentioned partnership: Seminars for Philosophiae Doctors, regularly hosted by The Chemical Society of Japan; Corporate-Lecturer Tour Courses (“Special Lecture on Chemical Industry Manufacturing” for doctoral course students) jointly organized by Global COE Chemistry Program of Tokyo Institute of Technology and Japan Chemical Innovation Institute (JCII); and the Internship Programs promoted by The Society of Chemical Engineers, Japan. In addition, in July 2009, the following were adopted as Industry-Academia Partnership Projects for Human Resources Development: “Manufacturing” Core Human Resources Development Program based on Polymer Science/Technology, proposed by Osaka University; and Chemical Manufacturing Education Base & Chemical Innovation Project, proposed by Shinshu University. These attempts are expected to continue and further develop horizontally.

Seminars for Philosophiae Doctors (hosted by The Chemical Society of Japan) Students who go on to the doctoral course are keen on learning and wish to play an important role in academia after completing the course. Such ambition is admirable. And yet, if they became overly academia-minded or research-minded, they will lose flexibility. There are only a limited number of open positions in academia after graduation. They need to know a bit in advance that there are many other diversified areas where they would be able to demonstrate their abilities and that there are diverse values in society.

This is one of the purposes for starting the Seminars for Philosophiae Doctors, in which about 22 chemical companies participate as committee members. Through group discussions and courses with chemical companies’ engineers as lecturers, seminar attendees become informed about various industrial career paths as well as research and development (R&D) cases in the industrial arena. These seminars have already been held six times over the past two years, with seminar attendees exceeding 400 on a cumulative basis. In 2009, they will be held in Nagoya and Fukuoka. I expect that these seminars will contribute to formation of strong linkages between postdoctorals and the industrial circle.

When I visited the American Chemical Society (ACS) last year, I heard that the ACS had also started 2-day workshops called "Preparing for Life After Graduate School (PfLAGAS)" for doctoral course students, and was surprised by this coincidence. The main purpose is the same, but the contents are prepared with sufficient care and consideration to include human skill education, teaching how to write a resume, guidance on how to find a job, and even mock interviews. Japan and the U.S. share the same problems of insufficient career path education after graduation and doctoral course students inadequate knowledge of industrial situations.

Future issue (1): Enrichment of statistical data

Dearth of statistical data concerning human resources of science course stu-
complishment of their research. On the number of philosophiae doctors for academic purposes, universities need to secure a certain number of staff members. Accordingly, in order to achieve both academic and social objectives, postdoctoral course students are not only educated in the fields of research, these programs might lead to higher evaluation of postdoctoral quality, and the virtuous cycle for philosophiae doctors can be realized. In my opinion, it would be good if the best and brightest students could go on to the doctoral course and be granted generous financial support. I suggest establishing a selection system based on determining in advance whether applicants can be granted financial support for their postdoctoral work. Such a system would help masters course students make their decision to go on to the doctoral course. If this measure could produce excellent postdoctoral students, it would lead to higher evaluation of postdoctoral research as a whole and ultimately lead to the virtuous cycle. The first thing to be emphasized is quality, rather than quantity. 

Closing remarks
Large-scale research programs are about to start under the supplementary budget. That is a good thing in itself, but I am worried that, depending on the field of research, these programs might mobilize quite a number of postdoctoral students. postdoctoral problem will occur. I sincerely ask that the Japanese government and practitioners who implement these programs formulate decent plans with due consideration for the future of postdoctoral students.

4) Refer to page 4 of the above-mentioned FY2007 Report.

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