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***Shokugyo kyaria no kukanteki kiseki:
kenkyu kaihatsu gijutsusha to joho gijutsusha
no raifu kosu
(Spatial Trajectories of Professional Careers: The Life Course
of R&D Engineers and IT Engineers).***

Okayama: Daigaku Kyoiku Shuppan, 187 pp., 2008 (ISBN 978-4-88730-829-9).

This volume focuses on the change in professional careers and locations of residences of scientists and engineers in the manufacturing industry and of IT engineers in the IT service industry. Individual life courses and spatial trajectories of the life courses, plotted geographically, are linked to, and elucidated based on, changes in their surroundings, national-level society, and economic background.

The author, Professor Nakazawa, is an up-and-coming researcher in his mid-30s. He has previously published remarkable research papers on the life course of engineers and on regional differences in the life course of women. Based on his research findings, Professor Nakazawa submitted his dissertation, “Life Courses as Seen from Professional Careers and Residential History: Case Studies of Manufacturing R&D Engineers and IT Engineers,” to the University of Tokyo in 2003, for which he was awarded a Ph.D. Six of the eight chapters in this present volume are based on his submitted dissertation.

During the 1980s, Japan’s employment system, characterized by a wage system based on lifetime employment and seniority, was highly praised. One reason was the growth of Japan’s economy and industries, which made its GNP the second highest in the world. But in the 1990s, because of the intense effects of globalization on Japan’s economy and industries, businesses had no choice but to build a new employment system. Under the new employment system, lifetime employment and seniority-based pay were weakened. At the same time, mid-career hires and mid-career retirees increased, as well as the number of irregular employees in order to reduce personnel costs. Professor Nakazawa’s research on the life course of employees is extremely significant for our time, which sees continuing changes in the Japanese employment system.

This book could be divided into three parts: 1) introduction, 2) discussion on the life course of scientists and engineers in the manufacturing industry, and 3) analysis of IT engineers in the IT service industry.

In the introduction, Professor Nakazawa discusses the purpose of the research presented in this book. He also introduces research related to this research topic up to the present day. As mentioned above, because this study is based on Professor Nakazawa’s doctoral thesis, his introduction of previous research and discussion are thorough. He examines not only geography, but gives a wide-ranging look at findings from related fields, such as economics and sociology. He also includes a great number of references written in English.

Let me explain the concept of “life course,” which serves as the lens of the research presented here, in comparison to the concepts of life cycle and life history. According to this book, a life course captures an individual’s life as a bundle of various histories, such as educational history, work history, family history, and residential history. The life course is positioned and connected to changes in economic background on the national level. Research on life course does not target individual lives, but rather assembles the subjects as cohorts.

In the second section of the book, Professor Nakazawa focuses his analysis on the life course of scientists and engineers who are employees of private businesses and live in the suburbs of metropolitan Tokyo. These subjects represent the conventional, stereotypical career path of Japanese company workers. In order to study the research topic, postal questionnaires were sent to research scientists and engineers drawn from the directory of the Japan Society of Mechanical Engineers, who are employed by private businesses and live in the suburbs of the Tokyo metropolitan zone. Data on the histories of 750 subjects

were collected.

First, the details of new graduates in this group were analyzed. As university and graduate school graduates, scientists and engineers involved in manufacturing industry have a high level of education history. Compared to other professions, a large percentage of jobs in R&D depend on the career office of universities and departments and on recommendations from the supervisors. Many of the headquarters and mother factories of major Japanese manufacturing companies are located in the Tokyo Metropolitan zone. By contrast, since prior to the Second World War, many of Japan's science and technology universities and departments, as institutions of national higher education, are located in the provincial zones. As a result, there is a spatial mismatch between the demand for technical personnel and the supply. As Nakazawa's research discovered, graduates from high schools in the provincial zones enroll in the science and engineering departments of national universities located in the major cities of the provincial zones. Then, primarily through the career office of the universities and departments or from recommendations of their supervisors, they are able to obtain R&D jobs at major companies in the Tokyo Metropolitan zone. As a result, there is a tie that gathers human resources from the provincial zones and moves them to the three largest metropolitan zones. Thanks to this tie, the spatial mismatch is eliminated. Using the concept of "embeddedness" developed by the sociologist Mark Granovetter, Professor Nakazawa explains that a contact's connection to job information is "embedded" in the location of scientists and engineers' terminal education (the region of one's university).

Next, Professor Nakazawa analyzes the career paths of these R&D scientists and engineers within their companies. They almost never transfer to other companies, and move from positions of basic and applied research to positions in developmental research, then to production sites, and finally, to positions in managerial roles, which ends their overall occupational career. These occupational careers represent the stereotypical life course in the Japanese employment system. The spatial trajectory of this life course depicted geographically corresponds to the distribution of business sites in the Japanese manufacturing industry. These stereotypical trajectories show that transfers of technical personnel to the Tokyo Bay area and to the outskirts of the Tokyo Metropolitan zone are transfers to R&D departments. Transfers of technical staff to the provincial zones are transfers to manufacturing sites. And transfers of technical personal

to central Tokyo are transfers to managerial positions.

In the third section of the book, Nakazawa analyzes the career paths of other kind of engineers. These career paths presume the changing of jobs under a new employment system that is shaking the conventional system. Nakazawa analyzes the life course of IT engineers in the information service industry, which is representative of this new employment system. The IT service industry was not tied to physical location, so it is an industry that was expected to be located in the provincial zones. Furthermore, because IT service companies could not gather many engineers in the three largest metropolitan zones, they established branch offices and subsidiary companies in the provincial zones. Also, local governments, as part of policies to vitalize their local community, have attracted information service businesses to their regions. As a result, many information service companies are located in the provincial zones.

Based on this fact, Professor Nakazawa analyzed the life course of employees of information service companies in the Kyushu region, a provincial zone. For data, companies were selected from "Software Companies" and "Internet Businesses" listings in the NTT phone directory, and postal questionnaires were sent to these companies. The histories of 480 software engineers and 130 Internet-related service employees were gathered.

The educational attainment of IT engineers is lower compared to the aforementioned R&D scientists and engineers in the manufacturing industry. Fifty percent of engineers in the software industry have graduated from university or graduate school, and for employees in Internet-related service companies, the figure is one-third. From the results of the analysis of the life course of IT engineers in the Kyushu region, more than half of the employees moved within their own local areas and do not move from there afterwards. Professor Nakazawa also found that comparatively many of the engineers also graduated from the local high schools and universities, obtained a job in the information service industry or other industries in the three largest metropolitan zones, and afterwards migrate back to their local region by changing jobs. These facts show that even though the wages are not high, there are many who strongly consider spending their entire life in the area in which they were born and educated. Nakazawa's study also showed the strong rootedness of a lifestyle in which they return to their hometowns to work after a certain age. Because the information service industry in the provincial zones have the characteristic of allowing easy employment through job changes, it plays a big role in offering employment to

these kinds of people.

In this book, Professor Nakazawa showed extremely interesting results such as those described above. I would like to raise a couple of notable points as a reviewer. First is the use of historical data of employees on an individual level for analysis. Almost all other conventional geographical and economical analyses of the movement of employees use aggregate data. The size of the data sample of R&D scientists and engineers and IT engineers presented here are in the range of hundreds; this is certainly not a large sample size. However, the history data includes information such as region of high school from which one graduated, final educational attainment, areas one has passed through, region of one's first employment, details of company employment, primary work history, location, salary, transfers, and type of residence (e.g. if the home is owned). This allows individual life paths to emerge. By making use of this individual-level data, analysis such as multiple regression using salary as the dependent variable to observe the influence of job changes and return migration could be performed.

The second notable point is that this study has deep significance internationally. It elucidates the values held by young people in Japan and their future hopes and shows how their life course is spent in the Japanese employment system, which has drawn the attention of the world. It is thought that the Japanese employment system is not effective for all the rest of the world. However, the book's findings show that it can be effectively used for obtaining and training core employees in a global company. The book also sheds light on the problem of human resources in the Japanese software industry, which prevents it from becoming a global center.

However, as I read the book, three questions arose which I wish to ask Professor Nakazawa. First, he applies Granovetter's concept of "embeddedness" to the geographical analysis of the life course of R&D scientists and engineers, and reaches the conclusion that a contact's connection to job information is embedded in the local region. In actuality, however, finding employment at major companies from colleges and universities located in a provincial zone differs greatly among the institutions. Therefore, is the job connection embedded in those institutions, which exist socially, rather than in the local area?

Second, the life course of female employees in the information service industry might be distinctive. This study has only a few female employees in its analysis, so almost no analysis from gender theory is done. In actuality, however, there might be differences in life course due to gender differences for female IT engineers. What kind of differences might be there?

The third question concerns the analysis of irregular employees, whose number has increased drastically recently. The book mentions this group as an aside in its analysis of employees in Internet-related industries. But how does irregular employment affect an employee's life course? Of course, the last two questions may be future next research topics for Professor Nakazawa.

The title of the book is "Spatial Trajectories of Professional Careers"; however, pretty much of the discussion in this book concerns sociological trajectories. Of course, the analysis from a spatial point of view yields major findings, such as the movement of new graduates from the provincial zones to the Tokyo Metropolitan zone, the intra-company transfers of employees in accordance with the distribution of business sites, the influence on their salary of return migration from the three largest metropolitan zones to the provincial zones, and the differences between two kinds of life course of IT engineers in the Tokyo Metropolitan zone and the Kyushu region.

Can the "spatial approach" and "spatial theory," viewpoints unique to geography, effectively compete with research in other related fields? Research in every area of geography is exposed to competition with research in related mainstream academic fields. The importance of the spatial approach and spatial theory has been recognized by mainstream academic fields such as economics, sociology, and the humanities. Professor Nakazawa is an associate professor of regional management in the faculty of economics at Oita University. I hope that his research on the life course of employees, approached from a geographical perspective and using geographical methods, will be evaluated not only in the field of geography, but also in fields such as economics.

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