

明治・大正の日本の地震学：「ローカル・サイエンス」 を超えて

Boumsoung Kim, *Meiji Taishō no Nihon no jishingaku: Rōkaru saiensu o koete [Beyond Local Science: The Evolution of Japanese Seismology during the Meiji and the Taisho Eras]*

Tokyo: Tokyo Daigaku Shuppankai, 2007. vi + 174pp, ¥3,360.

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Received: 7 April 2010 / Accepted: 7 April 2010 / Published online: 26 May 2010
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Seismology, the science of earthquakes and related issues, must seek to understand the Earth's natural mechanisms and to minimize the damage seismic events can cause. Because it has so often addressed safety measures, seismology offers STS scholars a lens through which they can observe scientists, government officials, laymen, and, of course, nature. Japan, a leader in the field, lays claim to the oldest society of seismologists and may be the first country to have appointed a seismologist to a university professorship.

In *Meiji Taishō no Nihon no jishingaku*, Kim Boumsoung limns the complex history of Japanese seismology in the Meiji and the Taishō eras, from the institutionalization of the science to the many innovations in observing seismic activities, showing that these were exploited in the revitalization of national pride. The book's many figures and pictures guide readers along the argument, which attempts to go beyond the old dichotomy between "internalistic" and "externalistic" explanations of scientific progress. It is not enough to argue that Japan first acquired science and technology from Western countries, only to catch up with its teachers later, and every STS scholar, especially those interested in debunking "center-periphery" models, will want to read this work by a promising historian of science.

In the introduction, Kim outlines the book's theoretical framework, highlighting an episode from the career of Ōmori Fusakichi, a forgotten researcher called the "world's authority of seismology" in the United States in 1906. If Japan was winning plaudits over a century ago, could it really have been at the periphery of seismic

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studies? To analyze the characteristics and historical significance of this discord, Kim describes in fine detail how Japanese seismology rose to international preeminence and later lost that position.

In the first chapter, Kim explains that the birth of Japanese seismology, from the late 1870s to the early 1880s, was midwived by foreign advisers (*o-yatoi gaikokujin*). Established after the 1880 Yokohama earthquake, the Seismological Society of Japan played a leading role as “foreign scientists in Japan discovered natural phenomena unique to Japan, a country far from Europe, and transformed them into Western scientific knowledge” (25). In other words, Japanese seismology was born at the intersection of Western science and Japanese terrain. While young foreign advisors Thomas Grey and James Alfred Ewing developed seismographs—one of the most important “inscription devices” in seismology—their colleague John Milne stretched his observation network nationwide to collect seismological data. Concerned about reducing earthquake damage, the Japanese government subsidized this observation network, which became the basis for the future development of Japanese seismology.

The second chapter traces the rise of a generation of native seismologists who gradually superseded their foreign counterparts. This process, which began in the late nineteenth century, involved the institutionalization of national seismic observations and of a department of seismology at the Imperial University. As Kim writes, “Seismological observations in Japan, which happened to be initiated by foreign advisors, grew into a uniquely Japanese system as earthquake observation absorbed hardware and software from the Seismological Society of Japan and allied itself to the national system of meteorological observatories” (54). The transition from foreign to Japanese scientists, or from the Seismological Society to state institutions, shifted the discipline’s emphasis to what Kim calls “meteorological seismology.”

The third chapter features Ōmori Fusakichi. A professor of seismology at Tokyo Imperial University, Ōmori served as the secretary-general of the Imperial Earthquake Investigation Committee, succeeding to Milne’s position as a “center of calculation.” Kim explains that Ōmori’s conclusions (rejected by modern seismologists), based on both contemporary data collected from all over the world and historical records of earthquakes in Japan, was driven by meteorological methods, and was admired by his peers around the globe. Standing at the center of the network of seismological knowledge production, Ōmori symbolized the discord between a hierarchy based on geopolitical considerations and the ranking of scholarly achievement.

In the fourth chapter, Kim describes the process by which Ōmori’s widely admired advances came to be disregarded and forgotten. Rather than cite his protagonist’s failure to forecast the 1923 Kantō earthquake (accurately predicted by Ōmori’s successor, Imamura Akitsune) or the rapid progress of geophysics in Europe, Kim focuses on the academic competition between the meteorology approach of Ōmori and Imamura and the physics approach of Nagaoka Hantarō and Kusakabe Shirō. After many twists and turns, this duel was finally settled, after the Kantō earthquake and the death of Ōmori, by the establishment in 1925 of the Earthquake Research Institute at the Imperial University. This meant, according to Kim, that Japanese seismology had been demoted from the center of scientific knowledge production to a satellite where raw data was collected.

In the last chapter, Kim retraces his argument and offers three conclusions. First, claims to global preeminence were far from being so much nationalistic hot air; second, the country's observation and research network was created by foreign advisors then further developed by Japanese scientists; and third, Japanese seismology lost its position and redefined its past as a mere "local science" under the influence of external changes.

Vividly recounted, this very detailed approach will appeal to many readers—indeed, it appealed enormously to me. And while I appreciate the suggestion that Japan's central position was the (unintended) result of intellectual hybridization, I would like to pose some questions about that process.

Seismology was just being born in the 1880s: is that why Japan moved so smoothly from the periphery to the center? This question leads to other questions. As is well known, seismology grew into a "big science" after World War II, when heavy investment smoothed the way for the emergence of the plate tectonics theory. In other words, money can help stabilize the center-periphery relationship. Another question: how did seismology mobilize financial resources? Let's consider for a moment the case of Turkey, where I conduct my own research as an anthropologist of seismology. Turkey could have ended up as a world center for seismology: the earth sciences were introduced in the latter half of the nineteenth century and scientific research on earthquakes have been done since the 1894 Istanbul earthquake (Bein 2008). But Turkish seismology never won sufficient governmental support to produce first-rate science. What then divides Japan and Turkey in this respect? I think it would be interesting to do a comparative study of these two countries.

I also wonder how Japanese scientists have fared in foreign research networks. Did they take a leading role in organizing the networks? The education system might be an important subject of research. Although Kim talks about "legitimate peripheral participation" in analyzing the interactions between countries, I think this model, which stems from research about the learning process in apprenticeships, would be more usefully applied to explain face-to-face education. After all, in the scientific world, a "novice" country can only very rarely act as a "master."

Lastly, I wonder whether we can describe a history of science as an entangled interaction between nature and society. Kim recounts how in Japan seismology arose through an unintended encounter between Japanese geography and Western scientists, reacting to events such as the 1880 Yokohama earthquake and the 1923 Kantō earthquake. Perhaps we ought to reintroduce the Earth as an actor with the same billing as scientists, inscription devices, and institutions. Seemingly absurd, my suggestion would involve opening the black boxes surrounding "nature" and the "environment."

References

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