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The Making of Japanese Patent Culture: The Impact of Westinghouse's International Patent Management

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This paper clarifies Japanese patent culture from the viewpoints of patent management and international business history. We examine the cases of Westinghouse Electric and Mitsubishi Electric. Although Westinghouse granted exclusive licenses to Mitsubishi, it controlled its Japanese patents directly through its own patent agent. Therefore, positive influences of Westinghouse's international patent management on Mitsubishi were limited. Rather, Mitsubishi developed its patent management comparatively independently. In 1923, Mitsubishi appointed a person to be in charge of patent affairs exclusively, followed by the formation of a patent section. Since 1935, the patent department began administering patent applications internally. Mitsubishi accumulated the organizational capability to apply for and administrate a volume of patents in the course of technical tie-ins with Westinghouse. This is the context of the creation of a Japanese patent culture. On the enforcement side, Mitsubishi Electric created a reconciliation system with competitors. Japanese electrical companies did not claim their rights strongly, but instead acted harmoniously toward each other. The reconciliation system consisted mainly of Mitsubishi, Shibaura Works, Hitachi, and Fuji Electric. This represents another feature of Japanese patent culture.

Introduction

This paper aims to clarify patent management and control by Westinghouse Electric and Manufacturing Company of the United States (Westinghouse) in Japan before WWII, and to examine how it affected the patent management of

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Mitsubishi Electric Company, Limited, which was a Westinghouse affiliate.

One of the features of the Japanese patent system or patent culture is that Japanese companies apply for a huge volume of patents. During the first decade of the twentieth century, the number of patent applications in Japan averaged 4,109 per annum, that is, about 7.5 percent of the 54,778 patent applications in the United States in that decade. In contrast, in that same decade, the number of patent registrations in Japan was 1,457, that is, only 4.6 percent of 31,520 registrations in the United States. After WWII, however, patent applications in Japan increased. In the 1960s, the number of patent applications was 84,117, that is, 92.9 percent of that in the United States. In the 1980s, the number of applications increased to 154,384, that is, 151.3 percent of that in the United States. Furthermore, in the 1990s, the number jumped to 301,781, that is, 2.4 times the number in the United States. Then, the ratio of patent applications in the two countries decreased to 1.8 because patent applications in the United States increased more rapidly than those in Japan; in the first decade of the twenty-first century, the number in the United States (403,584) exceeded that in Japan (401,263). Considering that the ratio of patent applications by foreigners to domestic applications in the United States is about 50 percent, while that in Japan is about 14 percent, it can be said that Japanese companies continue to file for patents on a large scale.

On the contrary, another feature of the Japanese patent culture is that the enforcement of patent rights is comparatively anemic. Japanese companies are apt to avoid court cases. During the 1960s, the number of appeals to, and trials in the patent office, both on the patent and utility model, was 356 per annum on average. This is the greatest number involved in the appeal and trial system in any decade from 1906 to 2010. The similar number in the first decade of the twenty-first century was 308. The number of intellectual property-related cases concluded in district courts, including patent, utility model, design, and trademark, was 486 in 2010.¹⁾ Considering that the number of patent cases contested in U.S. district courts was 3,301 in 2010,²⁾ it is clear that Japanese companies rarely enforced their rights despite their holding a large number of applications and registrations. Therefore, when Minolta lost a patent case on auto-focus devices in 1992 and paid \$127.5 million to Honeywell in settlement, almost all Japanese

1) Secretariat of Supreme Court of Japan, *Shiho tokei nenpo 1: minji, gyousei hen* [Judicial statistics 1: civil and administrative affairs] (Tokyo, 2010), 36.

2) Administrative Office of the United States Courts, *2010 Annual Report of the Director: Judicial Business of the United States Courts* (Washington, DC, 2011), 149.

companies were greatly shocked.³⁾

Thus, the Japanese patent culture is quite different from the American patent culture. How was each country's patent culture formed? One way to comprehend the evolution of the patent culture is to clarify the development of corporate patent management in each country. Because corporate patent management has taken lead in the patent culture so far, in 2010, about 96.8 percent of patent applications in Japan were made by corporations.⁴⁾ Going back into the history, we discover that Japanese corporate patent management was intimately affected by U.S. companies' international patent management. Tokyo-Shibaura Electric, which was formed by the merger of Tokyo Electric and Shibaura Engineering Works in 1939, developed its organizational capability for patent management in the 1920s and 1930s under the influence of General Electric's international patent management and control.⁵⁾ During the same period, Mitsubishi Electric was technically tied-in with Westinghouse Electric; they concluded a patent contract. How was the affiliation with Westinghouse Electric related to the development of Mitsubishi Electric's patent management and its patent management organization? To examine the Mitsubishi case is another step in clarifying the characteristics of Japanese patent management and patent culture.

This study is based on patent statistics collected from an internet database, and the official gazettes of the U.S. Patent and Trademark Office and the Japan Patent Office. The Record of Westinghouse Electric Corporations; the George Westinghouse Museum Research Collection of the Heinz History Centre in Pittsburgh, Pennsylvania; Marconi Archives of Bodleian Library of the Oxford University, the United Kingdom; and Mitsubishi Archives of the Mitsubishi Economic Research Institute, Tokyo, Japan, were the primary archival sources used.

The rest of this paper is organized as follows: first, the patent system and corporate patent management in the 1920s and 1930s are outlined. Then, Westinghouse Electric's foreign business and international patent management are described. Finally, the development of Mitsubishi Electric's patent management and its relationship with Westinghouse's international management are examined.

3) Akio Sakai, *Nichibei high-tech masatus to chiteki shoyuken* [Japan-US high technology dispute and intellectual property rights] (Tokyo: Yuhikaku, 1994), 36–39.

4) Japan Patent Office, *Tokkyo gyosei nenji houkokusho 2012 nen ban: tokei shiryō hen* [Annual report of patent administration 2012: statistics and data] (Tokyo, 2012), 47.

5) Shigehiro Nishimura, "General Electric's international patent management before World War II: the 'proxy application' contract and the organizational capability of Tokyo Electric," *Japanese Research in Business History* 21 (2004): 101–125; do, "International Patent Control and Transfer of Knowledge: The United States and Japan before World War II," *Business and Economic History On-Line* 9 (2011).

Making of corporate patent management in Japan

The modern patent system in Japan began with the Patent Monopoly Act of 1885. However, at that time, foreigners could not apply for patents for their inventions.⁶⁾ Not until 1899, when Japan joined the Paris Convention for the Protection of Industrial Property, were foreigners allowed to file and register their patents.⁷⁾ To modify the patent system to comply with the Convention, the Government of Japan amended its Patent Law. Under the Law, provisions relating to applications claiming priority were prepared, providing institutions with which foreigners could file and register patents in Japan.⁸⁾ In addition to the Patent Law, the Utility Model Law came into effect in 1905. The technological level of Japanese inventions at that time was so low that many inventors could not protect their inventions under the Patent Law, whereas those invented by foreigners were registered.⁹⁾ In 1909, the Patent Law was further amended, under which the employees' invention rule was provided for the first time. While the previous patent law stipulated that an inventor and its successor could obtain a patent, the Patent Law of 1909 stipulated that an employer could obtain a patent with respect to an employee's invention, in principle.¹⁰⁾ Furthermore, in 1921, the Patent Law was revised overall. One of the main points of this change was that a first-to-file system was adopted completely. Although the Japanese Patent Law first adopted the first-to-invent system and maintained that system in part after a revision in 1909, the Patent Law of 1921 confirmed the first-to-file system. Another main point is the change in the employees' invention provision. The revised law provided that an employee could obtain a patent covering an invention made by him or her while employed, in principle.¹¹⁾ Despite minor amendments, the fundamental framework of the Patent Law of 1921 continued until the 1950s.

Concurrently with the revision of 1921, patent activities within Japan increased. **Figure 1** shows trends of patent and utility model registrations from 1885 to 1945. This figure clearly indicates that the number of utility model registrations was

6) Tokkyo Cho [Japan Patent Office], *Kogyo shoyuken seido 100 nen shi [One hundred year history of the industrial property rights system]* 1 (Tokyo: The Japan Institute of Invention and Innovation, 1984), 150–151.

7) *Ibid.*, 1: 201–205.

8) *Ibid.*, 1: 184–191.

9) *Ibid.*, 1: 192.

10) *Ibid.*, 1: 314.

11) *Ibid.*, 1: 415–425.

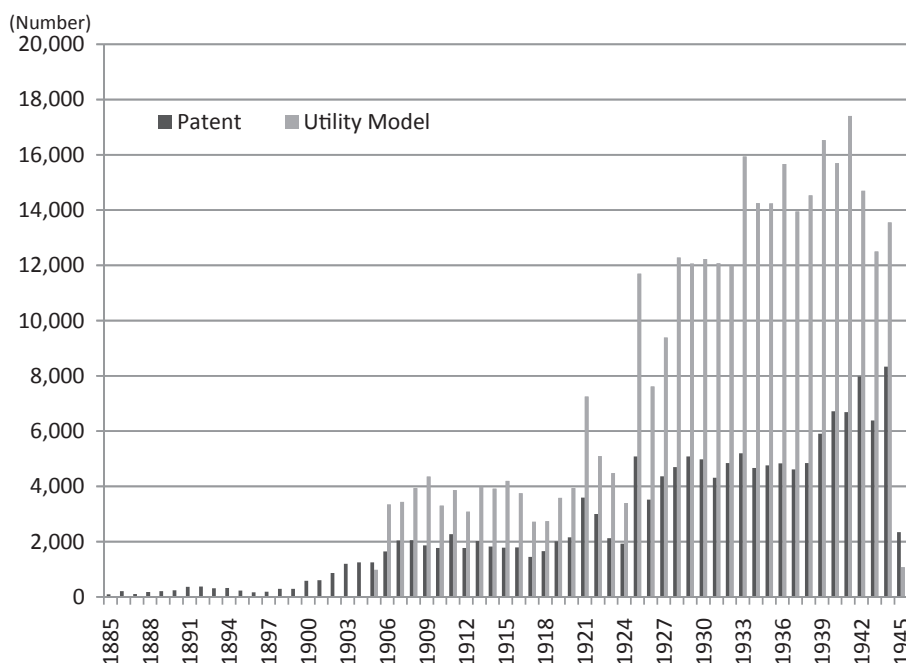


Figure 1 Patents and utility models registered

Source: Japan Patent Office data.

greater than that of patents, and grew rapidly. Since almost all utility model registrations were made by Japanese inventors, it can be said that the Utility Model Law of 1905 was useful for Japanese inventors; the Law brought awareness of industrial property rights to the Japanese people. Second, the most important change in the trends was the growth of patent and utility model registrations in the first half of the 1920s. The number of industrial property registrations per annum between the latter half of the 1920s and the 1930s increased by more than three times that of the 1910s. At the same time, corporate patent management progressed.

It was the companies' tie-in with foreign companies in licensing and technology introduction that began the management of intellectual property rights. Shibaura Engineering Works' case was the earliest. Shibaura Works concluded a contract covering capital participation and technical tie-ins with General Electric in 1909. Under the contract, Shibaura Works obtained patent licenses and manufacturing techniques for electrical apparatus, and carried on development simultaneously. In order to promote invention and control its results, in 1912, Shibaura Works appointed a person to be in charge of patent affairs exclusively. In the field of the

incandescent lamp, in 1905, Tokyo Electric made a contract with General Electric covering capital participation and technology inflow. At Tokyo Electric, an engineer in charge of patent affairs began filing patent applications beginning in 1917. This was the beginning of patent management at the company.

In the 1920s, however, patent management and its organization were significantly developed by being incorporated into General Electric's international patent management system. General Electric concluded international patent management contracts with both Shibaura Works and Tokyo Electric.¹²⁾ These contracts transferred to Japanese companies the right to apply in Japan for patented technology owned by General Electric; in their own names, Japanese companies could apply for and acquire a patent with themselves as the rightful claimants within Japan. Carrying those contracts into operation and administering Japanese patents covering General Electric's inventions, each company established and strengthened its patent department. Shibaura Works and Tokyo Electric hired patent experts from the Japan Patent Office to head their patent departments in 1921.¹³⁾ Patent management organization and activities of both companies stimulated other Japanese companies.

During the 1920s, some leading electrical companies established their patent departments. Part of the background was the development of the Japanese electrical industry and intensification of competition after WWI. In 1921, Hitachi, Limited, appointed two persons to be in charge of patent affairs and engage in patent administration. In 1923, Mitsubishi Electric organized its patent department. Fuji Electric was organized in the same year as a joint venture between Furukawa Electric and Siemens Schukertwerke of Germany. Fuji Electric had established a patent department since its foundation with in-house patent attorneys to manage its patent affairs.¹⁴⁾ In 1933, Hitachi organized a patent department and began patent management.¹⁵⁾

In the 1920s and 1930s, the number of patent attorneys employed by the company and engaged in patent management increased and achieved social

12) Nishimura, "General Electric's international patent management before World War II," 101–125.

13) Ibid.; Shigehiro Nishimura. "Gaikoku gijutu no donyu to tokkyo bumon no yakuwari: Shibaura Seisakusho ni okeru tokkyo bumon no seiritsu to tenkai [The introduction of foreign technology and the role of patent department: setup and development of patent department at Shibaura Works]" *Kokumin keizai zasshi* 186 (2002), no. 4: 1–18.

14) Choyo-kai 15th Anniversary Memorial Project Committee, *Choyo-kai 15 nensi* [Fifteen-year history of Choyo-kai] (Tokyo, 1953), 15.

15) IPR Administrative Office of Hitachi, Ltd., *Hitachi no chitekishoyuken kanri: kigyo no shorai o kizuku chitekishoyuken to sono senryakuteki katsuyo* [Intellectual property management at Hitachi: intellectual property and its strategic practical use to open a future] (Tokyo: The Japan Institute of Invention and Innovation, 1995), 18–24.

standing to some extent. Especially among electrical companies, in-house patent attorneys came together intimately; Choyo-kai, an organization created to promote mutual friendship and comprising patent attorneys heading corporate patent departments, was founded in 1938. The original members of Choyo-kai—namely Oki Electric, Shibaura Engineering Works, Tokyo Electric, Nippon Electric (NEC), Japan Radio Telegraph and Telephone, Hitachi, Fuji Electric, Furukawa Electric, Mitsubishi Electric, and Sumitomo Electric—represented a wide spread of corporate patent management.¹⁶⁾

Therefore, the 1920s and 1930s were the periods when patent management was diffused among leading Japanese companies; it can be said that this is the formative period of Japanese patent culture. The following section will examine how Westinghouse Electric's and Mitsubishi Electric's patent management developed against such a historical background, and how they contributed to the Japanese patent culture.

Westinghouse Electric in Japan

Westinghouse Electric's foreign business

The methods and organization of Westinghouse Electric's foreign business were quite different before and after WWI. From the late nineteenth century to WWI, Westinghouse Electric engaged in the manufacturing business in European countries with foreign factories they built. While George Westinghouse, the founder of the company, originally industrialized air brakes invented by him for trains, he entered into the electrical business by organizing Westinghouse Electric Company in 1886. This company was later reorganized as Westinghouse Electric & Manufacturing Company.¹⁷⁾ Westinghouse's brake company had already operated foreign businesses; he began foreign business in the electrical field by establishing the Westinghouse Electric Company, Limited (the London Company), in 1889. The London Company was a patent holding company and imported electrical apparatus from parent and affiliated companies and installed it in European countries.¹⁸⁾ In 1899, the British Westinghouse Electric and Manufacturing Company,

16) Shigehiro Nishimura, "Diffusion of Intellectual Property (IP) Management after World War II: Role of the Japan Patent Association," *Kansai University Review of Business and Commerce* 12 (March 2010): 19–39.

17) Harold C. Passer, *The Electrical Manufacturers, 1875–1900: A study in competition, entrepreneurship, technical change, and economic growth* (Cambridge, MA: Harvard University Press, 1953), 129–143.

18) "Memorandum of Association of the Westinghouse Electric Company, Limited," 9 July 1889, MS Marconi 2788.

Limited (the British Company), was established to manufacture electrical apparatus in England. The British Company built a huge factory at Trafford Park near Manchester and started producing electrical goods on an extensive scale.¹⁹⁾ Westinghouse Electric's manufacturing facilities were not limited to the United Kingdom. In 1901, George Westinghouse and his companies formed Societe Anonyme Westinghouse in France. The French company had manufacturing plants in Le Harve and Freinville, where they produced electrical apparatus and air brakes for Westinghouse's air brake companies. The Italian company and Russian company were also established for local manufacturing operations through the French Company in 1906 and in 1907, respectively.²⁰⁾

Westinghouse Electric's international patent management had developed during this period. In order to transfer technology and patents developed in Pittsburgh to Westinghouse companies in European countries and to manage and control technology and patents developed in Europe, the Westinghouse Patent Bureau was organized in London in 1900.²¹⁾ The bureau acted as a clearinghouse for the exchange of patent rights and technical information.²²⁾ Although the bureau in London was to manage and control all of Westinghouse Electric's foreign patents, except those of North and South American countries, almost all patents controlled by the bureau were of European. Thus, Westinghouse's foreign business before WWI was for the most part limited to Europe.

Although it had manufacturing factories, Westinghouse Electric's European manufacturing business was a failure. Especially in England, despite having a huge factory as big as that in Pittsburgh, the British Company never turned a profit.²³⁾ Westinghouse Electric of Pittsburgh decided on liquidation of the Russian manufacturing company in 1912. Two years later, Westinghouse Electric sold its share holdings in the French Company to the British Company; furthermore, in 1917, it sold all its holdings in the British Company to Electric Holdings, Limited, which was a syndicate organized in London. Westinghouse received 5 percent prior lien

19) British Company, Minutes of the Directors Meeting, 1 August 1899, MS Marconi 2794; Quentin R. Skrabec, Jr., *George Westinghouse: Gentle Genius* (New York, NY: Algora Publishing, 2007), 205.

20) Westinghouse Electric and Manufacturing Company, *Annual Report of 1906* (1907).

21) Shigehiro Nishimura, "European patent control: how did MNE's organize technology flows across the Atlantic Ocean?," proceedings for EBHA-BHSJ joint conference, Paris, September 2, 2012, unpublished.

22) M. M. Farnsworth, "The Union Switch and Signal Company: A review of its predecessors, formation, developments, growth, activities, acquisitions and affiliates" (June 4, 1948), 252, unpublished MS, George Westinghouse Museum Research Collection.

23) Mira Wilkins, *The Maturing of Multinational Enterprise: American business abroad from 1914 to 1970* (Cambridge, MA: Harvard University Press, 1974), 43; Henry G. Prout, *A Life of George Westinghouse* (New York, NY: Charles Scribner's Sons, 1922), 264; Skrabec, *George Westinghouse*, 205.

debenture bonds as compensation, all of which were eventually sold in 1919 for cash.²⁴⁾ As for the manufacturing business conducted by the British Company, Metropolitan Carriage, Wagon and Finance Company bought the assets of the British Company in 1917. Metropolitan Carriage, Wagon and Finance Company was, in turn, bought by Vickers, Limited, to become Metropolitan-Vickers Electrical Company, Limited, in 1919.²⁵⁾

After the withdrawal from the European manufacturing business, Westinghouse Electric's foreign business was conducted by Westinghouse Electric International Company (WEICO) of New York. The predecessor to WEICO was the Export Department under the Sales Department. The Export Department became

Table 1 Royalties and net income of WEICO

	Royalties and other fees	Net income ^{d)}
	\$	\$
1923 ^{a)}	8,058	2,251,091
1924 ^{a)}	102,903	182,665
1925 ^{a)}	127,014	627,480
1926 ^{a)}	132,383	1,099,659
1927 ^{a)}	132,271	940,978
1928 ^{b)}	132,685	739,689
1928 ^{c)}	130,561	807,245
1929 ^{c)}	191,841	1,116,423
1930 ^{c)}	374,687	1,057,588
1931 ^{c)}	322,034	△ 429,349
1932 ^{c)}	486,413	△ 351,198
1933 ^{c)}	388,629	356,725
1934 ^{c)}	480,327	955,380
1935 ^{c)}	483,112	1,086,750
1936 ^{c)}	553,681	1,363,453
1937 ^{c)}	609,987	1,732,417
1938 ^{c)}	726,929	1,380,700
1939 ^{c)}	706,026	1,186,257
1940 ^{c)}	633,651	1,839,207
1941 ^{c)}	75,082	1,453,131

Note: a) Year ended March 31 of the year.

b) 9 months ended of the year.

c) Year ended December 31 of the year.

d) Includes current year exchange adjustment.

Source: Annual departmental report of Westinghouse Electric International Company, December 19, 1944, Record of Westinghouse Electric Corporation.

24) Westinghouse Electric & Manufacturing Company, *Annual Report*, 31 March 1913: 7; *Ibid.*, 31 March 1915: 8; *Ibid.*, March 31, 1918: 6-7; *Ibid.*, March 31, 1920: 6.

25) Wilkins, *The Maturing of Multinational Enterprises*, 43.

Westinghouse Electric Export Company in 1916, and then changed its name to WEICO in 1919. WEICO was a wholly owned subsidiary of Westinghouse Electric and was headed by President L. A. Osborne. The business of WEICO was divided into export and import businesses, which were successors of the Export Department and licensing businesses.²⁶⁾ **Table 1** shows royalty and manufacturing fees received by WEICO from licensing agreements with foreign companies and the associated net income from 1923 through 1941. First, this table clearly indicates that the royalties received increased consistently during this period and soared after 1930 in particular. Second, while income from the export–import business was affected by a boom and crisis and greatly fluctuated, the royalties received were stable. One of the main pillars of Westinghouse Electric’s foreign business during the interwar period was, therefore, licensing to foreign companies; international patent management was significant.

Business and patent management in Japan

Westinghouse Electric entered the Japanese market as early as the late nineteenth century. In 1899, it appointed Takata & Company, a trading company specializing in importing machines, as its exclusive agent in Japan. Westinghouse Electric exported electrical apparatus into Japan through Takata & Company; during the same year, it delivered its generators to Yokohama Electric Lighting Company. Westinghouse Electric had been competitive with a generator for thermal power plants, especially before WWI.²⁷⁾ Its export business to Japan was reorganized when Takata & Company went bankrupt in 1925; for a while, the Japan branch of Westinghouse Electric directly distributed electrical apparatus. After 1929, it entrusted its selling operations to Mitsubishi Electric.²⁸⁾ Even in the 1920s, when Japanese electrical companies secured a large portion of the domestic market, electrical apparatus of large capacity had been imported from foreign countries; Westinghouse Electric retained a large portion of this market in some segments. For example, while the number of steam generators installed in Japan between 1919 and 1931 was 214, of which 170 were imported, 40 generators out of 170 were manufactured by Westinghouse Electric in Pittsburgh.

26) *Ibid.*, 43; Westinghouse Electric & Manufacturing Company, *Annual Report*, 31 March 1917; *Ibid.*, 31 March 1921; “Annual departmental report of Westinghouse Electric International Company,” 19 December 1944, unpublished MS, Record of Westinghouse Electric Corporation.

27) Naomasa Kasai, “Takata Shokai and Westinghouse: 1920 nen dai ‘Taihei kumiai’ taisei, sono hatan (shiron) [Takata & Company and Westinghouse: ‘Taihei partnership’ regime of 1920s and its failure (an essay)],” *Shogaku ronshu* 59, no. 4 (March 1991): 189–199.

28) Shin Hasegawa, “1920 nen dai no denki kikai shijo [Electrical apparatus market of 1920s],” *Shakai keizai shigaku* 45, no. 4 (December 1979): 44–8, 53–4.

During the same period, 35 generators manufactured by General Electric and 25 by Siemens were imported.²⁹⁾

Westinghouse Electric filed patent applications covering inventions made by its engineers in Japan as well as European countries. **Figure 2** shows the trend of patent application by Westinghouse from 1912 to 1941, which were later registered.³⁰⁾ All patent applications included in this figure were in the name of Westinghouse Electric, although some patents related to Westinghouse companies were filed before. Patents filed in the name of George Westinghouse or individual engineers were filed as early as 1898, just after patent applications by foreigners became legal. The number of patents filed in engineers' names during the 14 years up to 1911 and later assigned to Westinghouse Electric is 55. Thus, it is obvious that patent applications by Westinghouse Electric in Japan increased during the interwar period. Inventions covered by those patents were mainly related to electrical apparatus, electrical equipment for trains, and turbines.

In order to clarify Westinghouse Electric's foreign patenting strategy, we will make an international comparison. **Figure 3** compares patent applications in Japan with those in the United States between 1912 and 1941. The number of patent applications in the United States was 6,168 during the 15 years from 1912 to 1926, whereas that in Japan was 259, that is, about 4.2 percent of the number in

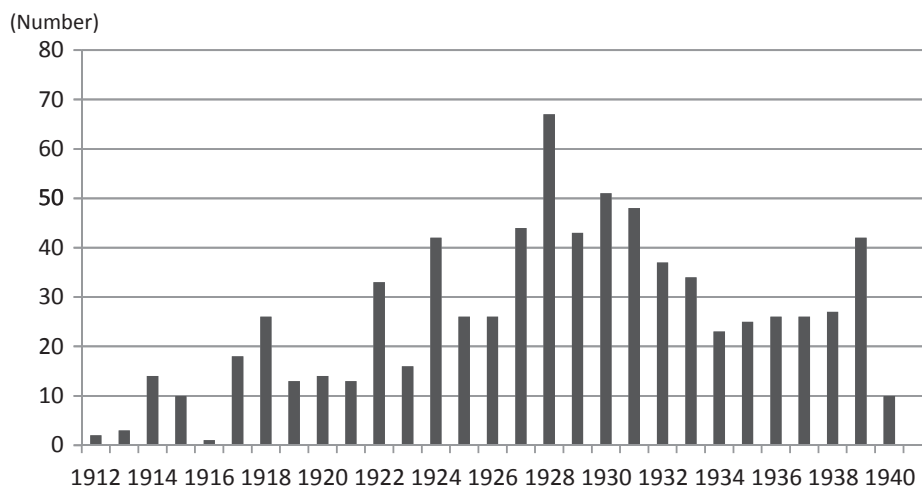


Figure 2 Westinghouse's patent applications in Japan

Source: Japan Patent Office, *Patent gazette*.

29) Ibid., 59–60.

30) Except utility model applications and registrations.

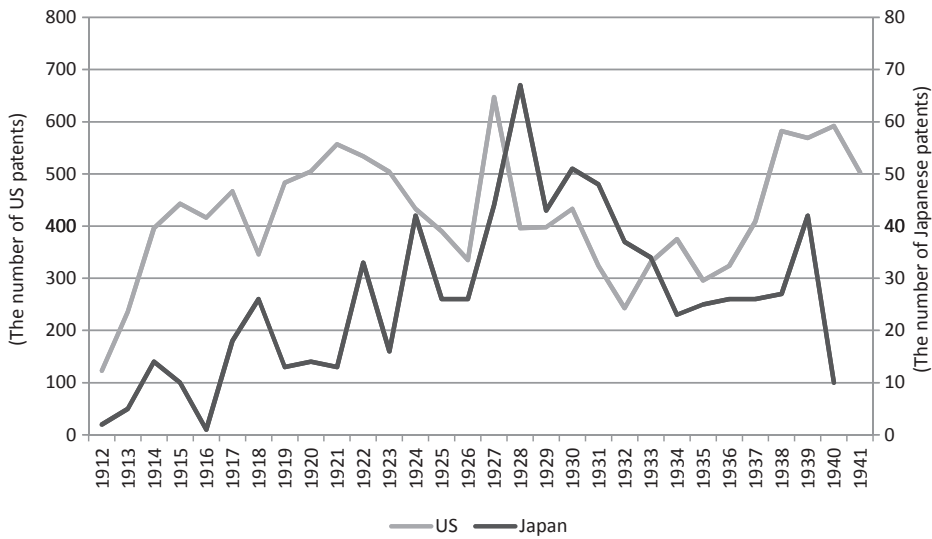


Figure 3 Comparison of applications in the US and Japan

Source: Japan Patent Office, *Patent gazette*; USPTO, Patent Data.

the United States. During the 15 years from 1927 through 1941, however, the number in the United States was 6,422, whereas that in Japan was 503, that is, about 7.8 percent of the number in the United States; during the interwar period, Westinghouse Electric increased patent applications in Japan. Furthermore, the trends in both Japan and the United States were similar or synchronized. Although the scale of patent applications in Japan is a tenth of that in the United States, the trend reflected in Japan a year later. Westinghouse Electric linked patent applications in Japan with its domestic patenting for about 10 years, beginning in the mid-1920s.

How did Westinghouse Electric control and administer its Japanese patent operation? Table 2 lists Westinghouse Electric patent agents sorted by application year. Patent agents usually administrate patent applications, maintenance, and enforcement. Although there are many patents not mentioning an agent, the patent agent of Westinghouse Electric's patents was Walter Augustus De Havilland until around 1920. De Havilland came to Hakodate of Hokkaido in 1893, just after graduating from Cambridge University. There, he was a private English teacher, and contributed to the spread of association football in Hokkaido and later Japan as a whole. In 1904, he moved to Tokyo and become a teacher at Tokyo Normal

Table 2 Patent attorney for Westinghouse patents
(The number of patent applications)

	Walter A. De Havilland	Yasudiro SAKAI	n.a.
1912			2
1913			3
1914			14
1915	1		9
1916			1
1917			18
1918	2		24
1919	2		11
1920	2	2	10
1921		1	12
1922	1	29	3
1923		16	
1924		42	
1925		26	
1926		26	
1927		44	
1928		67	
1929		43	
1930		51	
1931		48	
1932		37	
1933		34	
1934		23	
1935		25	
1936		24	2
1937		17	9
1938		14	13
1939		12	30
1940		1	9
1941			

Note: n.a.=not available

Source: Japan Patent Office, *Patent gazette*.

School. De Havilland quit the school and become a patent attorney in 1906.³¹⁾ He established his patent office at Kojimachi, Tokyo, and administered patents on behalf of several Anglo–American companies and individuals. From around 1920, the patent agent for Westinghouse Electric was Yasudiro Sakai. Sakai was an engi-

31) Hokkaido Football Association, *Hokkaido no soccer: Hokkaido soccer kyokai soritsu 80 shunen kinen shi* [Soccer in Hokkaido: commemorative book of the eightieth anniversary of Hokkaido Football Association's foundation] (Hokkaido, 2009), 57–61.

neer at Westinghouse Electric in Pittsburgh; he also applied and registered seven U.S. patents from 1910 to 1915. After returning to Japan, he became the chief engineer of the newly established Yasukawa Electric Company in 1915.³²⁾ It can be assumed that Sakai quit Yasukawa and moved to Tokyo to become a patent agent. As shown in this table, almost all of Westinghouse Electric's Japanese patent applications were conducted by Sakai during the interwar period. The advantages of using Sakai for patent administration were that he was well informed as to Westinghouse's technologies, and could comprehend English and communicate with Westinghouse Electric's engineers and staff in Pittsburgh. At any rate, the most important thing to be recognized is that Westinghouse Electric appointed patent agents and conducted patent management by itself, not through affiliated companies.

License agreement with Mitsubishi Electric

In the 1920s, Westinghouse Electric began licensing business to the Japanese manufacturing company, in addition to the export business. Guy E. Tripp, the President of the company, and L. A. Osborne, the President of WEICO, concluded a contract covering capital participation and technology tie-ins with Hideo Takeda of Mitsubishi Electric in Tokyo in November of 1923. The product lines of this contract included all of the electrical apparatus except radio-related equipment. Under the contract, Westinghouse Electric granted patent licenses and provided Mitsubishi Electric with technical information; in turn, Westinghouse obtained 30,000 or 9.83 percent capital shares of Mitsubishi Electric.³³⁾

The patent clause within the contracts between the two companies provided the following: Westinghouse Electric was to grant exclusive license under all Westinghouse's Japanese patents to manufacture, use, and sell, while Mitsubishi's territory was limited "in the Empire of Japan, its colonies and dependencies." In contrast, Mitsubishi Electric was to grant "a free and unrestricted exclusive license to manufacture, use and sell" under its patents registered in foreign countries, excluding Mitsubishi's territory.³⁴⁾ Although mutual exchange of licenses was provided, this contract was substantially for Westinghouse Electric to grant exclusive patent licenses to Mitsubishi Electric and receive royalties.

32) Shin Hasegawa, "Yasukawa Denki no hatten to kigyosha katsudo [The development of Yasukawa Electric Co. and its entrepreneurial activities]" *Keieishigaku* 21, no. 1 (April 1986): 3.

33) Mitsubishi Electric Company, Ltd., *Kengyo kaiko: Mitsubishi denki kabushiki kaisha shasi* [Reminiscence of inauguration: A history of Mitsubishi Electric Company, Limited] (Tokyo, 1951), 67.

34) Agreement between Westinghouse Electric & Manufacturing Company, Westinghouse Electric International Company and Mitsubishi Denki Kabushiki Kaisha, 20 November 1923, Mitsubishi Archives, section three.

This patent licensing framework was set up in order for Westinghouse Electric to provide Mitsubishi Electric with technological information. Namely, WEICO would communicate with Mitsubishi Electric “upon request all the technical manufacturing data and information which shall, from time to time, be acquired or be in the possession of” WEICO, “and which may be necessary for the manufacturing operation of” Mitsubishi Electric “in connection with the apparatus and plant coming within the scope of this agreement.”³⁵⁾ Actually, “designs, technological information, and manufacturing specifications” were provided to Mitsubishi Electric.³⁶⁾ Also, the contract provided that Mitsubishi Electric could keep two resident representatives at factories in the United States in order to learn manufacturing methods for electrical apparatus, and that Westinghouse Electric would accept no more than five of Mitsubishi’s engineers in its apprenticeship course.³⁷⁾ Those technology transfers from Westinghouse Electric to Mitsubishi Electric through multiple channels made Mitsubishi improve its technological level and stimulated Mitsubishi’s invention and development activities.

Patent management of Mitsubishi Electric

Employees’ invention rule

Awareness of patents at Mitsubishi Electric had arisen before the conclusion of the patent licensing contract with Westinghouse Electric. When and how the awareness had arisen will be examined by focusing on the employees’ invention rules and organizations for patent management.

Mitsubishi Electric, formerly Mitsubishi Shipbuilding Company Electrical Works, was established in 1921 by becoming independent from its parent. Main products of Mitsubishi Electric were electrical apparatus including turbine generators; rotary machines such as motors, transformers, rectifiers, switchboards, and distributors; electric railway equipment; electrical applied equipment including devices for vessels, mines, and iron manufacturers; elevators; electric fans; refrigerators; electric furnaces; electric heaters; radio equipment; and industrial machinery. When the Electrical Works became a separate company at the Kobe shipbuilding yard of Mitsubishi Shipbuilding in 1919, a special research group was set up within the design section to develop specific products; they developed

35) Ibid., section two.

36) Mitsubishi Electric, *Kengyo kaiko*, 67.

37) Agreement among Westinghouse Electric, WEICO, and Mitsubishi Electric, section two.

items from main motors for submarines to electric fans.³⁸⁾ These points clearly indicate that Mitsubishi Electric had begun positive inventive activities even before its establishment in 1921.

Awareness of patents had already existed at the beginning. Mitsubishi Electric obtained eight patents and two utility models by transfer from Mitsubishi Shipbuilding at the time of the company's establishment.³⁹⁾ In December 1922, "prescriptions for employees' invention at Mitsubishi Electric Company, Limited" were instituted. An action to make an employee's invention rule occurred in the parent body, Mitsubishi Shipbuilding; in 1907, a prescription for employees' invention was instituted by the company. However, this rule was not to encourage and promote inventions, but rather to put employees' inventions under the regulation of the company.⁴⁰⁾ After that, employees' inventions and honoring rules intended to encourage and promote invention were investigated by Mitsubishi & Company, and were considered and decided at the chief officer committee level, composed of Mitsubishi Shipbuilding, Mitsubishi Electric, and Mitsubishi Internal Combustion Engine Company.⁴¹⁾ The employee's invention rules of Mitsubishi Shipbuilding and those of Mitsubishi Electric are identical except for minor wording.

The principal clauses of the rule were as follows: Article 1 provided that "In the case that an employee makes ex officio a new and useful industrial invention within the scope of this company's operation, this company shall succeed the right to be granted a patent or patent right covering the invention. Cost of obtaining patents shall be borne by the company."⁴²⁾ This rule was harmonious with the employees' invention clause of the Patent Act of 1921. In article 2, the compensation for an employee's invention was addressed by providing that "In the case that this company succeeded the right to be granted a patent or patent right under the preceding article, the company shall grant considerable compensation."⁴³⁾ In order to deliberate whether the company should succeed the employees' inventions and how they would pay compensation, the Invention

38) Mitsubishi Electric, *Kengyo kaiko*, 45–48.

39) Patent Center of Mitsubishi Electric Company, Ltd., Editorial Board for the History, *Taiju eno michinori: Mitsubishi Denki tokkyo 70 nen no rekisi* [Distance to a big tree: a 70 years history of Mitsubishi Electric's patents] (Tokyo, 1996), 22.

40) Hiroko Maeda, "Historical inquiry into compensation for employee's invention: connection with institution of Mitsubishi Shipbuilding's employee's invention rule," *Kokumin keizai zasshi* 191, 6 (June 2005): 117.

41) *Ibid.*, 124.

42) Minutes of Directors Meeting, Mitsubishi Electric Company, Ltd., 13 December 1922, Mitsubishi Archives.

43) *Ibid.*

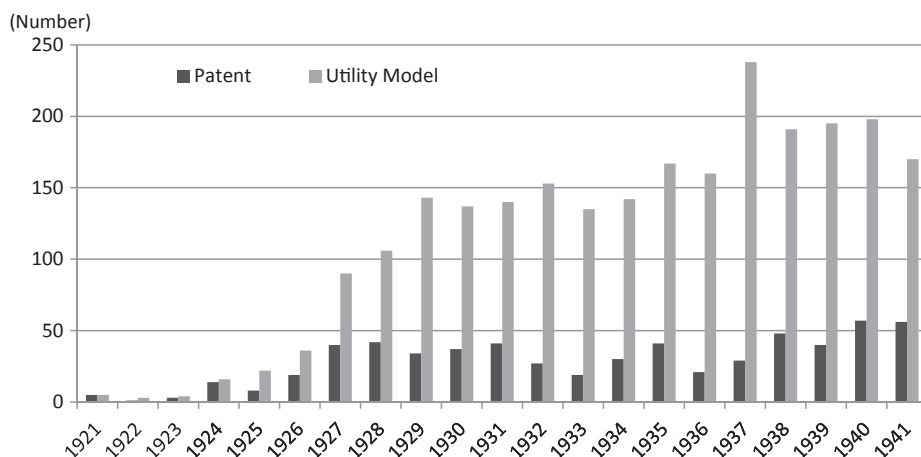


Figure 4 Mitsubishi's patent and utility model applications

Source: Patent Center, *Taiju eno michinori*, 198.

Screening Committee was established in October 1923 at the Kobe factory.⁴⁴⁾ This was based on Article 7, which provided that the “Managing Director can specially establish an invention screening committee to examine compensation and honoring provided by this prescription.”⁴⁵⁾

Patent applications by Mitsubishi Electric were made under these rules. Figure 4 shows the number of patent and utility model applications by the company from 1921 through 1941.⁴⁶⁾ One of the features of Mitsubishi Electric's patent application is that, from this figure, it preferred the utility model. During the 21 years from 1921 through 1941, 2,451 utility models were applied for, whereas 621 patents were applied for during the same period. At that time, Mitsubishi Electric could not make inventions of novelty and advancement in volume because of its poor technological standards. Another feature is that patent and utility model applications increased beginning in the latter part of the 1920s. Although the employees' invention prescription came into force on January 1st, 1923, it was not directly linked with an increase in patent applications. Rather, in addition to the incentive induced by the prescriptions, the increase could be caused by Mitsubishi Electric engineers being stimulated by the technical tie-in with Westinghouse and active inventing. Note that in the company's history,

44) Patent Center, *Taiju eno michinori*, 22; Mitsubishi Electric, *Kengyo kaiko*, 336.

45) Minutes of Directors Meeting, Mitsubishi Electric, 13 December 1922.

46) The figure shows the number of applications. Not all of these applications were registered as patents or utility models after the examination.

patent and technical tie-ins “doubled the results of our original research, too” and resulted in the production of its original devices such as a motor for electrical railways.⁴⁷⁾ Furthermore, although Mitsubishi Electric “had not been deeply interested in materials until now, we found that we could obtain good results if we used materials of Westinghouse’s specifications,” and “we deepened our understanding of materials and began basic research.”⁴⁸⁾ In this way, the technical tie-in with Westinghouse Electric stimulated the development of not only electrical apparatus but also basic research activities; as a result, the number of patent and utility model applications soared.

Patent management and its organization

Although the employees’ invention prescription was established, for a time, there was no organization to manage and control patents and utility models as a property of the company. However, in October 1923, a person exclusively in charge of patent affairs was appointed within the Technology Section of the Head Office at Kobe Works.⁴⁹⁾ That person was Masami Nakama. He joined Mitsubishi Electric in April 1923; after new member training, he took charge of that section. However, because the company had no patent administration knowledge or skill, he was trained for half a year after his assignment as a patent administrator in the Soga Kiyoo Patent Office, an independent patent agent. He was consistently the person responsible for the company’s patent affairs during the interwar period, and then became the first chief of the Patent Department in 1951.⁵⁰⁾ The trigger of Nakama’s 1923 appointment was a problem with a patent infringement case about an electric fan protection frame. This case was caused by Mitsubishi’s poor skill in reading patent specifications. Though they settled by paying a license fee to the patentee, they “were absolutely ashamed that Mitsubishi Electric, of all companies, infringed others’ patents.”⁵¹⁾ This case brought about the perception of the necessity of having a patent expert.

The patent organization was developed as follows. In October 1924, a minor section in charge of patent affairs was organized in the Technology Section of the Head Office. This minor section comprised Nakama and another staff person who was a designer. In September 1933, the minor section changed its location from

47) Mitsubishi Electric, *Kengyo kaiko*, 82.

48) *Ibid.*, 82.

49) Patent Center, *Taiju eno michinori*, 19.

50) *Ibid.*, 19.

51) *Ibid.*, 19–20.

the Head Office to Kobe Works, and was expanded to a staff of four. In July 1942, the minor section was raised in status to be the Patent Section of the Designing Department of Kobe Works, and was expanded to Nakama as chief and a staff of seven. In October of the following year, the Section moved under the Research Department of the Head Office, and at the same time, a liaison to the Japan Patent Office was assigned to the General Affairs Section under the Administration Department of the Head Office. From this organization, it can be seen that the Patent Section was located near the sites of research and development and manufacturing to administer and exchange technological information and to encourage inventions. In March 1944, the Patent Section moved again, this time under the Research Laboratory; in August 1951, the Section became the Patent Department underneath the Research Laboratory. At this time, the chief of the Department was Nakama, with an application section staff of seven and an investigating section staff of five. Finally, in February 1954, the Department changed its organizational position to be directly under the Head Office; the Department comprised two sections and four minor sections, with Nakama chief and a staff of 17, and was given the charge of conducting patent administration. This organizational scheme continued until October 1984.⁵²⁾

We now examine the administration of patent applications by the patent department of Mitsubishi Electric. Patent application administration is one of the substantial operations of patent management. **Table 3** shows the patent agent for patents applied for under the name of Mitsubishi Electric and later registered.⁵³⁾ This table shows that almost all patent applications were conducted by Kiyoo Soga, the head of Kiyoo Soga Patent Office until 1934. In 1935, Nakama became the agent of patent applications. Since Nakama was the chief of the patent department at that time, Mitsubishi Electric internalized patent application thereafter. Yasudiro Sakai, in this table, was an agent of Westinghouse Electric, as described above. Mitsubishi's agent was Sakai—but its patents were invented by foreigners; that is, the inventors of all such patents were foreigners located in Pittsburgh. Therefore, patent applications covering inventions by Westinghouse Electric's engineers, but filed in the name of Mitsubishi Electric, were managed not by the patent department of Mitsubishi but by the agent of Westinghouse.

At this point, we should examine the relationship between the development of

52) *Ibid.*, 20–22.

53) The figures in this table are based on a number representing not all applications, but rather patent applications that were registered after the examination. So the number of applications is different from the numbers in Figure 4.

Table 3 Patent attorney for Mitsubishi patents
(The number of patent applications)

	Kiyo-o SOGA	Yasudiro SAKAI	Masami NAKAMA	Jiro OHASHI	n.a.
1921					
1922	3				
1923	1				
1924	11				
1925	3				
1926	13				
1927	23				
1928	19				7
1929	14				9
1930	10				7
1931	9				6
1932	18				5
1933	14				5
1934	3	2			15
1935		2	10		19
1936		1	7		2
1937			17		1
1938			22		7
1939			13		10
1940		4	28		12
1941	2	3	33	3	
1942			45		3
1943			47		1
1944			17		
1945			1		

Note: n.a.=not available

Source: Japan Patent Office, *Patent gazette*.

Mitsubishi Electric's patent management and Westinghouse's international patent management. As shown above, Westinghouse's patent management approach in Japan was to appoint its own patent attorney, Yasudiro Sakai, to manage and control Japanese patents directly. Namely, Mitsubishi Electric was not incorporated in Westinghouse Electric's international patent management system; this is quite different from the cases of Tokyo Electric and Shibaura Works, which managed and controlled General Electric's Japanese patents on General Electric's behalf. The patent department's history states that "although we got licenses to use W-company's Japanese patents freely, we were not permitted to participate in

patent application processes”; Westinghouse asked Sakai to conduct patent applications directly.⁵⁴⁾ However, Mitsubishi Electric was unsatisfied with this relationship with Westinghouse. In 1930, Mitsubishi proposed to Westinghouse that “we wish Westinghouse to leave patent application procedures in Japan relating to W-company’s inventions in Mitsubishi’s hands. For instance, since patent laws on claims and on others are different, the patent application process should be considered in the Japanese market, so we ask Westinghouse to entrust patent application to us.”⁵⁵⁾ That is, Westinghouse Electric’s patents were not suitable for the Japanese market because Westinghouse applied for patents through a patent agent lacking a detailed grasp of the local competitive situations: those patents could be unprofitable for Mitsubishi as a licensee. If Mitsubishi Electric had filed for patents on behalf of Westinghouse Electric, more suitable patents could have been applied for. However, Westinghouse turned Mitsubishi’s proposal down; Mitsubishi’s participation in patent application procedures did not increase. The reason why Westinghouse rejected the proposal was that “it would take much effort to operate in a different way than with licensees in other countries.”⁵⁶⁾ Accordingly, Mitsubishi Electric did not administrate affiliated company’s patent applications; this is different from the cases of Tokyo Electric and Shibaura Works.

Enforcement and settlement

We now will examine the features of Mitsubishi Electric’s patent management from the enforcement point of view. This also is relevant to clarifying Japanese patent culture in the 1920s and 1930s within the electrical industry. One of the features of patent management among electrical companies was to thoroughly avoid both infringement and enforcement. Mitsubishi Electric’s history states that “designers could not endure fears made by competitors’ industrial rights.”⁵⁷⁾ Although a company needed to investigate others’ patents to determine whether its inventions infringed them, it was impossible to completely investigate all related patents. Accordingly, Mitsubishi Electric and its competitors practiced the following: “when a company designed a new product structure, it showed its

54) The patent department’s history indicates that Westinghouse asked Kiyoo Soga Patent Office to file patent applications, but this is not correct. As shown in Table 2, Westinghouse asked Yasudiro Sakai to do it. The address of Soga was 755 & 756 Marunouchi Building, 1-1 Eiraku-cho, Kojimachi-ku, Tokyo, and that of Sakai was 465 in the same building as that of Soga.

55) Patent Center, *Taiju eno michinori*, 29.

56) *Ibid.*, 29.

57) Mitsubishi Electric, *Kengyo kaiko*, 335.

drawing to competitors and inquired whether they had patents or patent applications with which it conflicted.”⁵⁸⁾ Namely, they openly described newly invented products to their competitors, even when they had not yet obtained patents. To this inquiry, competitors answered honestly. When Mitsubishi Electric inquired to Shibaura Works, which was the leader of the electrical industry, “we could obtain a kind and honest answer.”⁵⁹⁾ It was a general way for Mitsubishi Electric to reconcile or avoid conflict with competitors. Some cases noted as “inquiry about scope” in Mitsubishi Electric’s litigation ledger tell us that the patent department “surely confirms the scope of the rights to the other companies.”⁶⁰⁾

Why did Mitsubishi Electric and other electrical companies not claim their rights strongly, but act harmoniously toward each other? One reason is that they had not accumulated enough organizational capability to claim and enforce their exclusive rights, in part, because the patent system had not sufficiently diffused and the awareness of patents and related information was poor. However, more fundamentally, another reason is that the technological level of patents was not high enough to justify enforcing such rights. Mitsubishi Electric and other electrical companies did not restrict competitors’ business by enforcing exclusive patent rights; rather, they encouraged each other in developing and manufacturing efficient electrical apparatus. For example, Mitsubishi Electric thought that “competitors are not bitter enemies but are companions; while pitting our skills against one another, we have to sympathize mutually and obtain the fruit of coexistence and co-prosperity.” Therefore, it was thought that “colleagues in the same line of business should permit members to use patent rights” because the duty of manufacturers was to produce better electrical goods by mixing their own inventions and others. So patent negotiations and discussions among electrical companies were intimate and moderate.⁶¹⁾

Mitsubishi and other major electrical companies set up and regularly held “the four companies’ patent preliminary meeting” in order to regulate their patents.⁶²⁾ The companies that participated in this meeting were Shibaura Works, Hitachi, Fuji Electric Company, and Westinghouse Electric. Although it was limited to four electrical equipment companies, a private settlement system had been formed for patent rights, which was guaranteed by the national trial system.

58) Patent Center, *Taiju eno michinori*, 27.

59) Mitsubishi Electric, *Kengyo kaiko*, 335.

60) Patent Center, *Taiju eno michinori*, 27.

61) Mitsubishi Electric, *Kengyo kaiko*, 335.

62) Choyo-kai, *Choyo-kai 15 nensi*, 97.

The four companies' meeting scheme was expanded into the Choyo-kai. The Choyo-kai, an organization for promoting mutual friendship consisting of patent attorneys in charge of corporate patent departments, was founded on September 9, 1938. The roles of the Choyo-kai were to coordinate opinions among the members concerned when patent infringement cases occurred before submitting demands for trial, to coordinate patent licenses among the members, and to support members in patent litigations against outsiders. Therefore, the Choyo-kai extended the four companies' patent preliminary meeting system into other areas of the electrical industry. However, when a reconciliation of patent rights was not achieved under the Choyo-kai scheme, such conflict was settled by the appeal and trial system or the judicial system.

While Mitsubishi Electric participated in the patent reconciliation system, we should examine how Westinghouse's international patent management affected Mitsubishi's patent management. As described above, Westinghouse Electric managed and controlled its Japanese patents directly by appointing its own patent agent, not through Mitsubishi's patent department. However, some portion of Westinghouse Electric's Japanese patents came under the administration of Mitsubishi Electric. In 1936, it was registered that 81 of Westinghouse's patents were transferred to Mitsubishi.⁶³⁾ As shown in Table 3, some of Westinghouse's patents were applied for and registered in the name of Mitsubishi Electric specifically. In the latter part of the 1930s, Mitsubishi Electric was involved in some appeal and trial cases relating to Westinghouse's patents. Some cases are examined below.

The first case is about an appeal and trial case on patent number 88,950, titled "system for electric regulation." This patent covered an invention made by John F. Peters of Pittsburgh, filed on October 16, 1928, and registered in October 29, 1930, in the name of Westinghouse Electric. Patent number 88,950 was transferred to Mitsubishi Electric and registered on June 1, 1936. In 1935, Shibaura Works demanded the Patent Office of a trial to invalidate this patent. At the time, the patent attorneys of Mitsubishi Electric were Yasudiro Sakai and Masaharu Hashimura. When the decision that the patent was invalid was handed down on November 25, 1936, Mitsubishi Electric appealed immediately to the Patent Office. This litigation was eventually settled in June 1937 by sharing the patent among two companies.⁶⁴⁾

63) Japan Patent Office, *Patent gazette* 1492 (16 December 1936).

64) *Ibid.* 1493 (18 December 1936); 1573 (12 July 1937).

The second case is on patent number 105,506, titled “arc discharge device.” This patent was originally invented by Joseph Slepian and Leon R. Ludwig of Pittsburgh. A Japanese patent was applied for on July 19, 1933, and was registered on March 24, 1934, in the name of Westinghouse Electric. This patent was transferred to Mitsubishi Electric and registered on June 1, 1936. In 1939, Tokyo Electric and Kawanishi Machine Works separately demanded of the Patent Office a trial to invalidate this patent. The patent attorneys involved in those cases on behalf of Mitsubishi Electric were Sakai and two others. The decisions were handed down in August of the same year that the patent should have been invalid. Although Mitsubishi appealed to the Patent Office immediately, the appeal was rejected in November of the same year. Then, Mitsubishi instituted a lawsuit in the Supreme Court against the Patent Office; however, it was decided that the patent was invalid in April 1940.⁶⁵⁾ From those cases, it can be seen that, while Mitsubishi Electric administered and controlled some of the Westinghouse’s patents transferred to it, enforcement procedures, e.g., trials and appeals for the patents, were conducted by the patent attorneys on behalf of Westinghouse.

On the other hand, the patent department administered enforcement procedures such as trials and appeals on patents and utility models invented by Mitsubishi Electric and those of competitors. When Mitsubishi demanded a trial in 1939 against Demag Aktiengesellschaft to invalidate utility model right number 323,830, this case was conducted by Kiyo-o Soga as the patent attorney on behalf of Mitsubishi.⁶⁶⁾ In the same year, Mitsubishi demanded of the Patent Office a trial to invalidate utility model right number 201,392 of Tatsuru Shimbo, titled “electrical switch.” In this case, Nakama was the patent attorney on behalf of Mitsubishi Electric.⁶⁷⁾ Moreover, in the trial for the invalidation of Mitsubishi’s utility model right number 235,844, invented by Naotake Hisano and titled “refrigerator,” demanded in the same year, the patent attorney was also Nakama.⁶⁸⁾ In this way, the patent department of Mitsubishi Electric administered enforcement procedures of its own patents and utility models, in some cases by itself, namely by chief and patent attorney Nakama, and in other cases by cooperation with external patent attorneys.

65) Japan Patent Office, *Decision on appeal/trial gazette* 20 (4 October 1939); 24 (19 December 1939).

66) *Ibid.*, 1 (16 August 1938).

67) *Ibid.*, 3 (18 October 1938).

68) *Ibid.*, 6 (20 December 1938).

Conclusion

The aims of this study are to clarify Westinghouse Electric's international patent management in Japan, evolution of Mitsubishi Electric's patent management, and the relationship between them.

Westinghouse Electric managed and controlled its Japanese patents in quite different ways as compared to General Electric. General Electric entrusted patent management in Japan to Tokyo Electric and Shibaura Engineering Works, companies affiliated with General Electric since the 1920s. The two companies applied for General Electric patents in their own names and used them. In contrast, although Westinghouse granted exclusive licenses to Mitsubishi Electric, it managed and directly controlled its Japanese patents through its own patent agent Yasuhiro Sakai. Also, on the enforcement side, Westinghouse administered procedures directly through their own patent attorneys. Therefore, any positive influence of Westinghouse's international patent management on Mitsubishi Electric was quite limited as compared to General Electric's practices with its affiliates.

Instead, Mitsubishi Electric developed its patent management comparatively independently. Employees' invention rules were gradually instituted; the awareness of intellectual property arose gradually over time. In 1923, Mitsubishi Electric appointed a person in charge of patent affairs exclusively; the minor section for patent affairs was organized in the next year. The patent department began administering patent applications internally since 1935; the patent management organization was developed consistently over years. Technical tie-ins with Westinghouse stimulated inventive activities with the company and yielded many fruits. Mitsubishi Electric accumulated the organizational capability to apply for and administrate a volume of patents and utility models efficiently in the course of Westinghouse's technological interactions. This is the context of the creation of the Japanese patent culture—that companies are inclined to apply for large volumes of patents. On the enforcement side, Mitsubishi Electric, together with other electrical companies, created a reconciliation system peculiar to Japan. They did not claim their rights strongly, but instead acted harmoniously toward each other; specifically, they attached importance not to competition over patent rights, but to competition based on developing and manufacturing and to contribution to the wealth of the nation. The reconciliation system, which consisted mainly of Mitsubishi, Shibaura Works, Hitachi, and Fuji Electric, represents another feature of the Japanese patent culture.