1996

Does a Cultural Barrier to Intellectual Property Trade Exist? The Japanese Example

Toshiko Takenaka
University of Washington School of Law

DOES A CULTURAL BARRIER TO INTELLECTUAL PROPERTY TRADE EXIST? THE JAPANESE EXAMPLE

TOSHIKO TAKENAKA*

I. INTRODUCTION

What is the so-called "cultural barrier to intellectual property trade?" No definition for this phrase readily came to me when I began exploring the topic. Japanese intellectual property scholars and professionals strongly suspect that their U.S. counterparts, who find institutional or economic explanations for discrepancies between European and American business customs, nevertheless tend to attribute the differences between Japanese and American business practices to cultural differences. Three popular arguments offered to substantiate this "cultural barrier to intellectual property trade" theory are: (1) the application of the concepts of competition and monopoly to intangibles such as technology and ideas is foreign to Asian culture; (2) Japanese imitation of basic technological innovation is rooted in Japanese culture; and (3) the Japanese only utilize the basic technology developed by U.S. inventors and do not add any new innovations themselves.

This paper proposes that the first argument does not apply to Japan. An analysis of historical developments reveals that technology and idea monopoly systems existed long before Japan adopted a modern intellectual property system similar to the European and American models. With regard to the second and third arguments, the Japanese Patent Office's survey on patent applications for semiconductor technology reveals that U.S. and European inventors produced early breakthrough inventions. This suggests that Japanese technological development policy tends to focus on the manufacture and application of technologies rather than on the creation of basic innovative technologies. However, the difficulties Euro-

* Research Assistant Professor and Assistant Director, Center for Advanced Study & Research on Intellectual Property [CASRIP], University of Washington School of Law, Seattle, WA.

pean countries faced in achieving technological breakthroughs implies that a cultural barrier cannot explain the difference. Finally, Japan's failure to excel at innovation does not create a barrier to intellectual property trade. License negotiations in the form of royalty payments for U.S. and European technologies, and/or grant-backs of improvements, tend to correct any trade imbalance caused by the Japanese focus on application and manufacture of technologies. In short, this paper argues that, upon close examination, the assumptions underpinning the "cultural barrier to intellectual property trade" theory demonstrate that the differences in Japanese and Western intellectual property practices are not grounded in culture. Furthermore, this paper argues that cultural differences do not create a barrier to intellectual property trade.

II. PRE-MODERN INTELLECTUAL PROPERTY SYSTEMS IN JAPAN

Despite the allegations made by proponents of the first theory, a monopoly system for technology has long been a feature of Japanese regulatory structures. Central and local governments granted monopolies or patents for technology even before Japan adopted a modern intellectual property system in 1871.[1] These pre-modern systems generally had the same effect as the current intellectual property system in maintaining an orderly market and encouraging innovation by providing subsidies or granting monopolies.

The first pre-modern system in Japan, a subsidy system rather than a patent system, developed when craftsmen distinguished themselves from farmers as independent professionals. A primitive feudal system developed between the third and fifth centuries.[2] At that time, most people were farmers supplying agricultural labor to their feudal landlords. They fabricated their own tools and other implements in the intervals between their farm tasks. As a routine of agricultural labor was established, and people began to differentiate among labor tasks, landlords began to exempt those farmers who were

1. Senbairyaku Kisoku [Exclusive Sales Summary Rule], Rule No. 170 of 1871 as suspended by Law No. 105 of 1872, and replaced with Senbai Tokkyo Jōrei [Exclusive Patent Law] (1988).

2. The primitive feudal system, called *be*, was adopted from Korea and China. MOTO-O ENDO, 1 NIHON SHOKUNIN SHI NO KENKYŪ [STUDY OF HISTORY OF JAPANESE CRAFTSMANSHIP] 52 (1985).

good craftsmen from agricultural duties so that they could craft tools and create a framework for greater specialization.[3] This arrangement established craftsmen as independent professionals.

In addition, from the fifth to seventh centuries, landlords encouraged the dissemination of Korean and Chinese technology by inviting craftsmen from these nations to Japan[4] and offering them land in exchange for teaching their skills to locals in the landlord's territory. After the emperor's family seized power from local landlords and established a central government in the seventh century, the government began to retain the best skilled craftsmen and architects. These craftsmen and architects worked at government-owned factories (*kan kōbō*) as low-ranking bureaucrats (*tomonobe*). In effect, Japan had already established a subsidy system for developers of technological innovation by this time.[5] Through this subsidy system, the government led the initiative in technological development.

In the twelfth to sixteenth centuries, a monopoly system called *za* (literally, "seat") was developed for the protection of developers of innovation.[6] The *za* system was essentially a monopoly granted by the landlords or local governments to a profession that had regained power as the central government declined. Under the auspices of the *za*, craftsmen were granted the right to ply their trades. In order to join, a craftsman was required to have a patent from his landlord granting him the right, for example, to build and sell fittings. The *za* system was characterized by strong feudal ties between craftsmen and their landlords. Although craftsmen enjoyed the benefits of a monopoly in their local markets, they served their landlords by providing compulsory labor. The patent for practicing the craft could be inherited by family members.

After the *sengoku* period, the feudal lords (*daimyō*) dissolved the *za* system during the civil law era in response to demands from the craftsmen and merchants who were excluded

3. These artisans are called *takumi*. *Id.* at 54.

4. These foreign craftsmen were called *tehito* to distinguish them from *takumi*. *Id.*

5. By the tenth century, the government had created a system for monopolizing and centralizing the most advanced technology available at that time. ENDO, *supra* note 2, at 66.

6. ENDO, *supra* note 2, at 74.

from the market. A new type of monopoly system, called *nakama* (literally, "association"), arose in the seventeenth to eighteenth centuries after the Shogunate government at Edo (*Edo Bakufu*) gained control of the nation.[7] Although the *nakama* was also a patent system controlled by the central government, it differed from the *za* system in that it was a self-regulated association voluntarily adopted by the craftsmen as a group. The *za* system, on the other hand, was characterized by a one-on-one relationship between each craftsman and his landlord.[8]

Both the *nakama* system and the European merchants' guild system were voluntarily adopted by professionals in an effort to regulate the market. Like the European guild system, the *nakama* system regulated the number of members in each profession as a means of securing monopoly benefits. The *nakama* members paid taxes to the central government, which, in return, policed the market to exclude nonmembers.[9]

One important role of the *nakama* system was to maintain and improve the quality of craftsmanship.[10] For example, the *nakama* set standards for the materials and tools that the members used, and prohibited members from working after dark. In addition, the *nakama* created an extensive apprenticeship system to train young craftsmen. Although the master's son often inherited the mastership, in principle the best-skilled craftsman who satisfied all the training requirements usually succeeded to the mastership.[11] The most experienced and skilled masters were elected as leaders, so masters and apprentices worked very hard to improve their skills. The *nakama* also protected trade secrets by preventing apprentices from working for other masters. Members were prohibited from sharing technological expertise, allowing them to concentrate on improving their craftsmanship. In short, the *nakama* functioned like a patent system in that it encouraged innovation.

---

7. ENDO, *supra* note 2, at 78.

8. ENDO, *supra* note 2, at 79.

9. JAPANESE PATENT OFFICE, 1 KŌGYŌ SHOYŪKEN HYAKUNEN SHI [CENTENARY HISTORY OF INDUSTRIAL PROPERTY SYSTEM] 8 (1984).

10. ENDO, *supra* note 5, at 89.

11. The mastership is called *kabu* (literally, "stock"), or *oyakata ken* (literally, the "right of mastership"). ENDO, *supra* note 2, at 99.

The *nakama* also served as a trademark system,[12] as its rules prevented non-members from representing their work as that of a *nakama* member. It thus maintained market order by eliminating possible confusion as to the origin of goods. Furthermore, the *nakama* provided standards that ensured the quality of goods made and sold by members.

In addition, the *Edo Bakufu* granted each local government patents for making and selling local products unique to the region.[13] In effect, local governments created laboratories for the invention and improvement of local products and sold the products directly to the public through exclusive dealing offices. In certain respects, the *Edo Bakufu* system closely paralleled a modern patent system. After the *Meiji* government came to power in 1868, the national patent system that was eventually adopted drew extensively from the principles of the *Edo Bakufu* system.

When the *Meiji* government first overthrew the *Edo Bakufu*, it abolished all feudal patent systems and dissolved the *nakama* in order to remove restrictions from the market.[14] The result, however, was a chaotic market situation. The *Meiji* government realized it needed to create a new patent system in order to centralize patent power.[15] In order to achieve its goal of replacing the local government structures (*han*) with new local governments under greater central governmental control (*ken*), the *Meiji* government sought to eliminate all revenues flowing to the *han*, especially monopoly profits. The presence of significant trade-barriers within the national market, resulting from local monopolies, reinforced the government's desire to abolish local monopoly systems. This reasoning further accelerated the *Meiji* government's adoption of a modern intellectual property system.

Although the *Edo Bakufu* encouraged the development of craftsmanship, it discouraged innovation. Thus, even today, the encouragement of innovation is considered alien to Japanese culture. For this reason, Japan's decision to adopt a modern intellectual property system is often attributed to foreign

12. JAPANESE PATENT OFFICE, *supra* note 9, at 8.
13. JAPANESE PATENT OFFICE, *supra* note 9, at 8.
14. JAPANESE PATENT OFFICE, *supra* note 9, at 15.
15. JAPANESE PATENT OFFICE, *supra* note 12, at 23.

pressure.[16] However, an intellectual property system would not have taken root in Japan without a domestic market need. The vast differences between the old and modern patent systems became apparent,[17]and Japan realized that the *nakama* had to be replaced in order to create an orderly market and reward innovation.[18] The major difference between the *nakama* and the modern patent system is that the modern system grants a patent to a particular technology for a limited time, whereas the *nakama* granted a monopoly to a profession indefinitely. Essentially, the new system shifted the main purpose away from securing privileges for the ruling class and toward encouraging technological innovation and industrial development.

In short, both monopolies relating to technology and systems designed to encourage innovation and maintain an orderly market have existed since technology-based professions were established in Japan. When foreign countries pressed Japan to adopt an intellectual property system, Japan was ready. Although the old patent system differed from the modern patent system, the maintenance of market order through a monopoly system has been the common goal of both the premodern and modern intellectual property systems. Clearly, the use of a monopoly system for technology and ideas is not foreign to Japan.

III. JAPAN'S LACK OF INNOVATION IS UNRELATED TO CULTURE

The second and third theories might be valid if it could be shown that Japanese technology fails to achieve the standard of technological innovation attained in both the United States and Europe. Using semiconductor technology as an example, a Japanese Patent Office survey indicates that early breakthroughs in technology were made by non-Japanese ap-

16. MIYAKE, TOKKYO, HONNSHITSU TO SONO SHŪHEN [THE PATENT: ESSENTIAL AND RELATED ISSUES] 17 (1981). *But see,* JAPANESE PATENT OFFICE, *supra* note 9, at 8. Although the Edo Shogunate published a rule prohibiting inventions of luxury articles, the rule did not apply to ordinary products and tools. Furthermore, the Shogunate promoted the invention of unique local products.

17. JAPANESE PATENT OFFICE, *supra* note 12, at 16. In the original bill introducing the patent system, a patent was called *shinki kabu* (literally, "novel stock") to distinguish it from old patents under the *nakama* system.

18. JAPANESE PATENT OFFICE, *supra* note 12, at 40.

plicants, namely U.S. and European inventors. Figure 1 illustrates the key inventions that led to the development of a new diffusion process, one of the basic technologies used in manufacturing semiconductors.[19] In Figure 1, the black circles indicate the inventions filed by non-Japanese applicants and white circles indicate inventions filed by Japanese applicants. The statistics demonstrate that most early inventions were conceived by non-Japanese applicants. As the technology matured, however, the number of Japanese inventions based on this technology increased. This suggests that Japanese contributions are made in the areas of manufacturing and application technologies, rather than in basic technologies.

Figure 2, which indicates the number of patent applications for diffusion technology filed by non-Japanese and Japanese applicants alike, also supports this conclusion.[20] Although Japanese applicants required ten years to catch up with American and European technological standards, the number of Japanese applications soon surpassed the number of non-Japanese applications. Although American and European applicants maintain a significant lead in the area of basic technology, their edge in application and manufacture of technology is not as great.

Figure 3 indicates the number of applications for open-tube diffusion equipment, a technology considered essential for the mass-manufacture of semiconductor devices.[21] In only five years, Japanese applicants achieved parity with U.S. and European technologies. The number of applications for patents to develop equipment and methods to test semiconductor devices, a typical manufacturing technology used to improve the yield of products, appear in Figure 4, which shows that, from the beginning, Japanese applications outnumber non-Japanese applications.[22] In short, while Japanese companies lag in the area of breakthrough technology, their contributions in perfecting the technology and in the mass-production of semiconductors are significant.

---

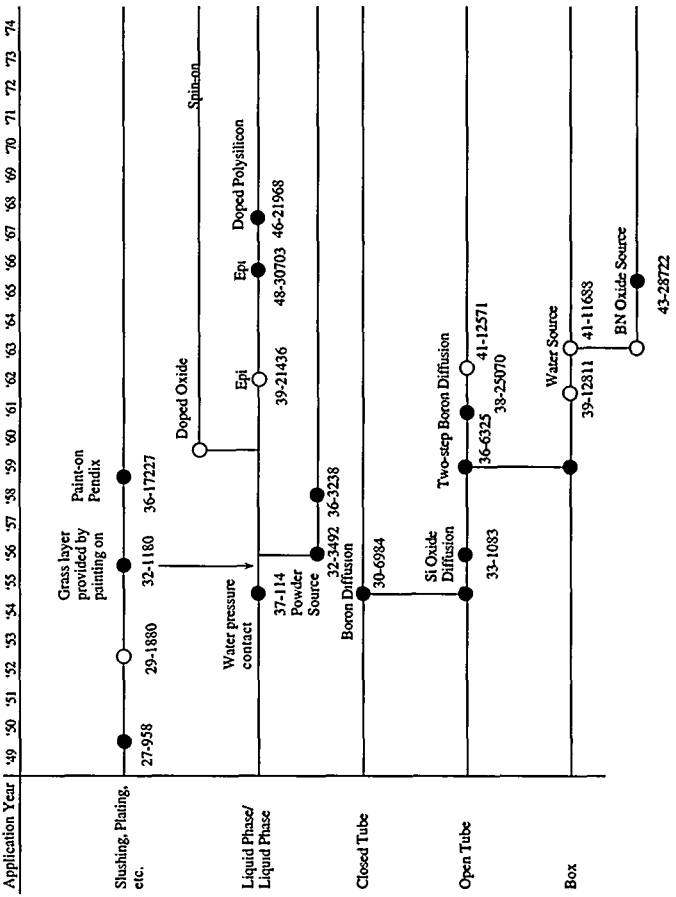
19. JAPANESE PATENT OFFICE, TOKKYO KARA MITA GIJUTSU DŌKŌ [TECHNOLOGICAL TRENDS IN VIEW OF PATENTS: SEMICONDUCTOR FIELD] 60 (1975).

20. *Id.* at 60.

21. *Id.* at 67.

22. *Id.* at 250.

FIGURE 1.
KEY INVENTIONS THAT LED TO DEVELOPMENT OF NEW DIFFUSION PROCESS



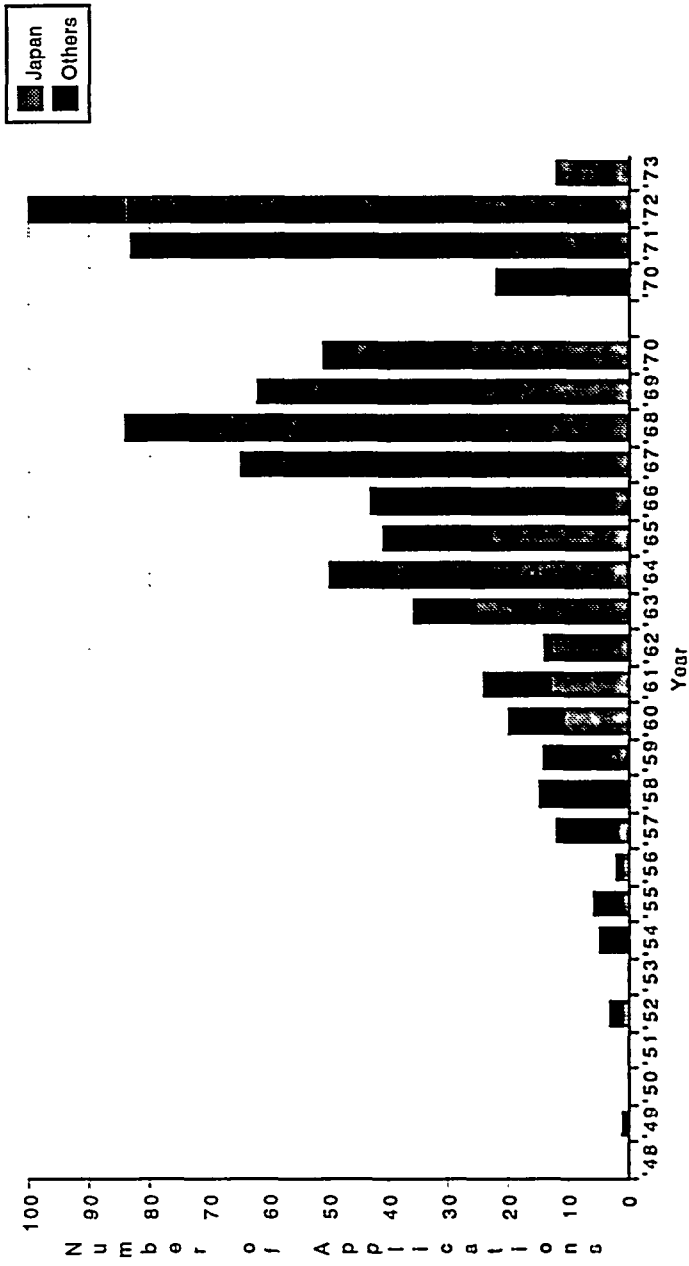


FIGURE 2.
NUMBER OF PATENT APPLICATIONS FOR DIFFUSION TECHNOLOGY

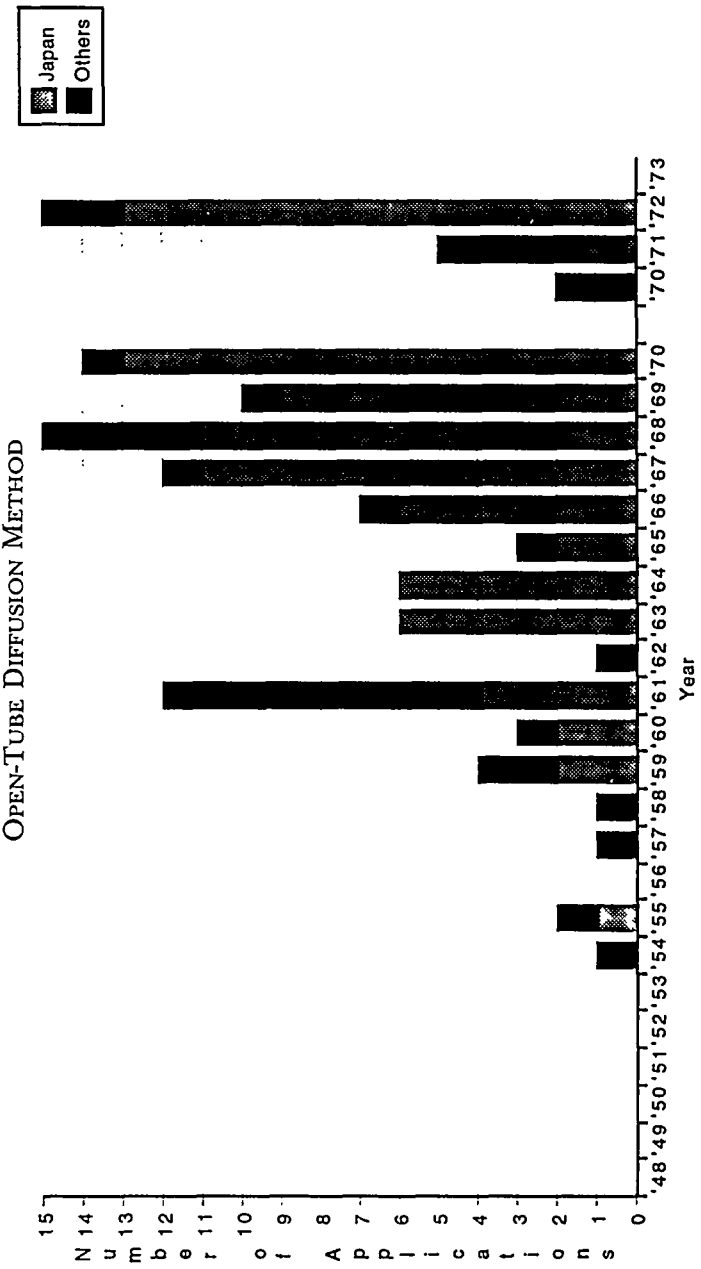
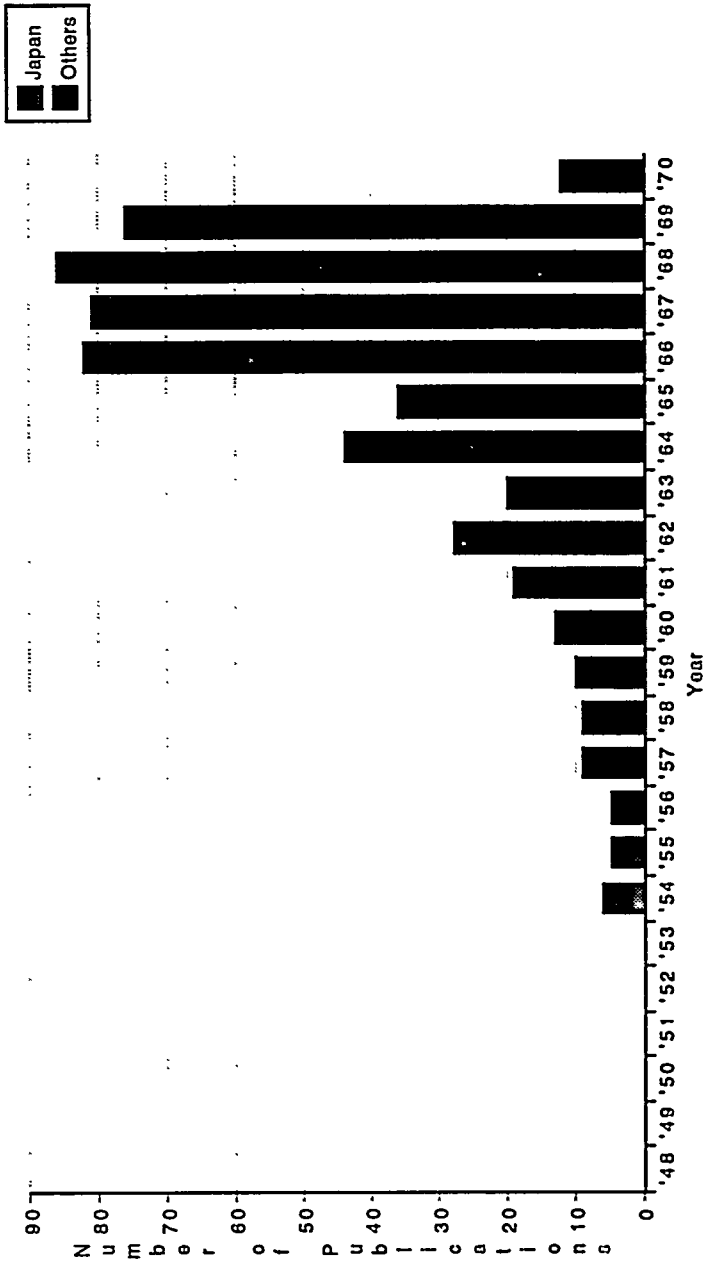


FIGURE 3.
OPEN-TUBE DIFFUSION METHOD

FIGURE 4.
TESTING METHOD/EQUIPMENT FOR SEMICONDUCTOR DEVICE



While Japan does focus on the application and manufacture of technologies rather than on basic technologies, one must nevertheless question whether this phenomenon has a cultural basis. One commentator has attempted to tie the lag in Japanese technological innovation to its educational system,[23] arguing that the system has always focused on reverse-engineering and technology translation. Under Japan's traditional educational system, an apprentice learned his craft by copying his master. Similarly, students and engineers in the *Meiji* era learned about American and European technology by copying imported products. This tradition of imitation continued in the national universities and laboratories established by the *Meiji* government. According to this commentator, this history explains the lack of innovative technology in Japan.

Such an apprenticeship system is not, however, unique to Japan. The German educational system for engineers, for example, is still based on the apprenticeship model, yet Germany has managed to produce a number of distinguished scientists and inventors. Even if Japan's technological focus is partially attributable to the apprenticeship system, this apprenticeship system is rooted more in Japan's economic and political systems rather than its cultural heritage. This is supported by the fact that both Japan and Germany have historical and religious cultures that distinguish them from the rest of the West, yet only Germany excels at innovation.

Japan's sociological structure is also said to be a factor in the decision not to focus on innovation. Leading Japanese researchers who have abandoned Japanese academia often suggest that the difficulty of being creative in the rigid university system is one of the main reasons behind their departures.[24] Adventurous researchers fail to thrive in Japanese universities where authority and seniority are valued and rewarded over creativity and ability. Because this rigid structure is also characteristic of European academic institutions, however, it cannot be seen as a uniquely Japanese cultural phenomena.

---

23. FUMIO SHIMURA, HAITEKU KOKKA NIHON NO CHITEKI SENTAKU [INTELLIGENT CHOICE BY HIGH TECHNOLOGY ORIENTED COUNTRY—JAPAN] 28-60 (1993).

24. Clyde Haberman, *Japan Asks Why Scientists Go West to Thrive*, N.Y. TIMES, Nov. 8, 1987, at A9, *cited in* FRED WARSHOFSKY, THE CHIP WAR: THE BATTLE FOR THE WORLD OF TOMORROW 111 (1989).

In comparing Japanese and American cultures, another commentator claims that the Japanese value diligence and experience as much as innovation and entrepreneurship.[25] Japanese values may encourage inventors to concentrate on developing improvements rather than on creating something completely new. Yet these cultural "differences" cannot be seen as the definitive cause for Japan's failure to focus on innovative technology, because Europeans also esteem diligence and experience.

The Japanese tendency to concentrate on the application and manufacture of technologies is exacerbated by the government's research and development [R&D] and industrial development policies. As Dr. David C. Hill accurately points out, history demonstrates that Japan's technological development is characterized by a strong bond between the government and the private sector.[26] This bond was reinforced during the *Meiji* period when the government played a major role in ensuring that American and European technologies were transferred to private companies.[27] The government managed the transfer of technology in two steps: first, after identifying key technologies, it built national laboratories and manufacturing plants that implemented the technologies, using the help of American and European instructors. Second, the plants and laboratories were then sold on the market place, and the buyers retained the government engineers. These privatized plants and laboratories, run by former government officials, became the foundation of Japanese industry.[28]

Since the *Meiji* period, the Japanese government's R&D policy has centered around the application of transferred tech-

25. FRED WARSHOFSKY, THE CHIP WAR: THE BATTLE FOR THE WORLD OF TOMORROW 89 (1989).

26. David C. Hill, Remarks at the Conference on the Culture and Economics of Participation in an International Intellectual Property Regime, Engelberg Center on Innovation Law and Policy, New York University School of Law (Mar. 1-2, 1996).

27. Kenji Sasaju et al., *Kōgyōka ni Hatashita Kangyōseisaku no Yakuwari: Nōmushō Shōkōkei Gishi o Megutte [The Role of Industrial Promotion Policy in the Industrialization Case of Technical Craftsmen in the Ministry of Agriculture], in* GIJUTSU NO SHAKAISHI [HISTORY OF TECHNOLOGICAL DEVELOPMENT] 237 (Sasaki Junnosuke ed., 1983).

28. *Id.* at 239.

nologies, rather than the creation of new technologies.[29] The government investigates future technological developments and prepares domestic companies to utilize these technologies.[30] Some commentators attribute the success of Japan's Ministry of International Trade and Industry [MITI] to its ability to identify key areas of technology and, subsequently, to focus the technological development of Japanese industry in those areas.[31]

Government leadership in the transfer, application, and manufacture of technology is not unique to Japanese policy. It is well settled among historians that shifts in commercial and industrial policy have occurred during different historical periods.[32] The patent system was originally developed by the British government in the late sixteenth century in order to encourage the transfer of technology from the Continent. In order to achieve technological parity, the United Kingdom focused its R&D efforts on the application and manufacture of transferred technologies. However, once the United Kingdom became a technology leader, it altered its policies in order to prevent its own technology from being transferred to other countries.[33] When countries on the Continent, particularly Germany and Switzerland, led innovation in the chemical industry, the United Kingdom responded by removing chemical

29. Yukihiko Kiyokawa, *Nihon no Gijutsu Hatten Sono Tokushitsu to Gan-i [Progress in Technology in Japan: Its Characteristics and Implications], in* GIJUTSU NO SHAKAISHI [HISTORY OF TECHNOLOGICAL DEVELOPMENT] 288 (Sasaki Junnosuke ed., 1983).

30. For example, in the 1950s, the Ministry of International Trade and Industry [MITI] assumed responsibility for the transfer of key technologies as a means of restoring Japanese industry destroyed in the wake of the Second World War. Like the *Meiji* Government, MITI implemented special laws designed to promote key industries. It identified and secured access to key technologies for leading Japanese industrial companies. By doing so, MITI ensured that new technology would take root and prove fruitful for Japanese industry. This project produced a significant number of improvement patents as reflected by the number of patent applications made by Japanese industry in the late 1950s and 1960s. (*See* Figures 1 to 4 discussed above). *See* MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY, VOL. NO. 6, TSUSHŌ SANGYŌ SEISAKU SHI [GOVERNMENT POLICY HISTORY OF INTERNATIONAL TRADE AND INDUSTRY] 587 (1990).

31. WARSHOFSKY, *supra* note 25, at 115.

32. AKIO OKOUCHI, HATSUMEI KŌI TO GIJUTSU KŌSŌ [INVENTIVE ACTIVITIES AND TECHNOLOGICAL DEVELOPMENT PLAN] 8 (1992).

33. *Id.* at 151.

substances from the list of patentable subject matter. This policy encouraged British industry to develop patent alternatives to German manufacturing methods as well as to improve chemical substances themselves.[34] The United States also focused on the application and manufacture of European technologies until the beginning of this century.[35]

In short, Japan's focus on application and manufacture of technologies is unrelated to culture. The policy is a means of achieving technological parity with advanced nations while assuming minimal risk.[36] Because Japan's access to foreign currency was limited after the *Meiji* Restoration and the Second World War, it had to find an efficient means of catching up with the United States and Europe technologically. Investment in basic technology simply did not make sense for Japan.

IV. JAPAN'S LACK OF INNOVATION DOES NOT CREATE AN INTELLECTUAL PROPERTY TRADE BARRIER

Japan's inability to match the United States in technological creativity has not created a barrier to intellectual property trade. Japanese technological innovation is not simply about copying—its focus is on adaptation and application.[37] Key foreign technologies are adapted to domestic needs, and technological improvements add value to foreign inventions. As shown above, Japan has made significant contributions to semiconductor technology through its focus on the application and manufacture of technology. Although innovation is seemingly valued above application and manufacture, innovative technologies often require further development to become commercially viable.[38] Such technologies will not contribute to industry unless translated into commercially viable

34. *Id.* at 163.

35. *Id.* at 93-94.

36. *Id.* at 3. The author identified three entrepreneurs' strategies for dealing with technology developed by others: (1) ignore the technology; (2) imitate and improve the technology; or (3) develop alternative technology independent of the new technology. Entrepreneurs wishing to catch up with the technological leaders in the short-term while assuming minimal risk would choose the second option. The author concluded that in choosing from among these options, one should consider business strategy, technological basis, and resources. *Id.*

37. SHIMURA, *supra* note 23, at 28 (1993).

38. OKOUCHI, *supra* note 32, at 42.

products. Without Japan's application and manufacturing capabilities, the mass-production of semiconductors would have been significantly delayed.

Furthermore, these Japanese technologies became available to American industry royalty-free through cross-licensing with the basic technologies.[39] Any excess value that may be derived from enhancements to basic technologies is paid off in royalties to U.S. and European inventors.[40] Although Figure 5 indicates that Japan's technology export rate has steadily increased to match its import rate,[41] technology imported from the United States and Europe significantly exceeds levels of Japanese exports, as shown in Figures 6(a) through 6(e).[42] In addition to permitting royalty-free licensing of technologies, Japanese companies have consistently paid licensing fees for the transfer of technology. When individual Japanese companies could not afford royalty payments, MITI responded by enacting mechanical and electronic industry promotion laws to assist with royalty payments.[43] Rather than simply pirating the technology, Japan employed a strategy that enabled it to obtain the technology legally, and to improve patents as a means of reducing the royalty costs via cross-licensing.

Japan has been criticized for its narrow claim interpretation of Japanese patents.[44] Yet this narrow claim interpretation has never acted as an intellectual property trade barrier because Japanese companies pay royalties regardless of con-

39. OKOUCHI, *supra* note 32, at 98. The number of technology exchange agreements between Japanese and foreign companies in the electrical industry has steadily increased since 1965. *See* OKOUCHI, *supra* note 32, at 107 n.54.

40. OKOUCHI, *supra* note 32, at 175.

41. TECHNOLOGY RESEARCH INFORMATION DIVISION, GENERAL COORDINATION DEPARTMENT, AGENCY OF INDUSTRIAL SCIENCE AND TECHNOLOGY, TRENDS IN PRINCIPAL INDICATORS ON RESEARCH AND DEVELOPMENT ACTIVITIES IN JAPAN 33 (1994).

42. *Id.* at 34-35.

43. MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY, *supra* note 30, at 549.

44. U.S. GENERAL ACCOUNTING OFFICE, EXECUTIVE SUMMARY IN INTELLECTUAL PROPERTY RIGHTS: U.S. COMPANIES' PATENT EXPERIENCES IN JAPAN 5 (July 1993). However, the most recent case law indicates a move towards more generous protection. Toshiko Takenaka, *New Policy in Interpreting Japanese Patents*, CASRIP Newsletter (CASRIP, U. WASH., Seattle), Spring/Summer 1996, at 3.

FIGURE 5.
RATIO OF EXPORTS TO IMPORTS IN TRADE OF TECHNOLOGY (MANAGEMENT AND COORDINATION AGENCY)

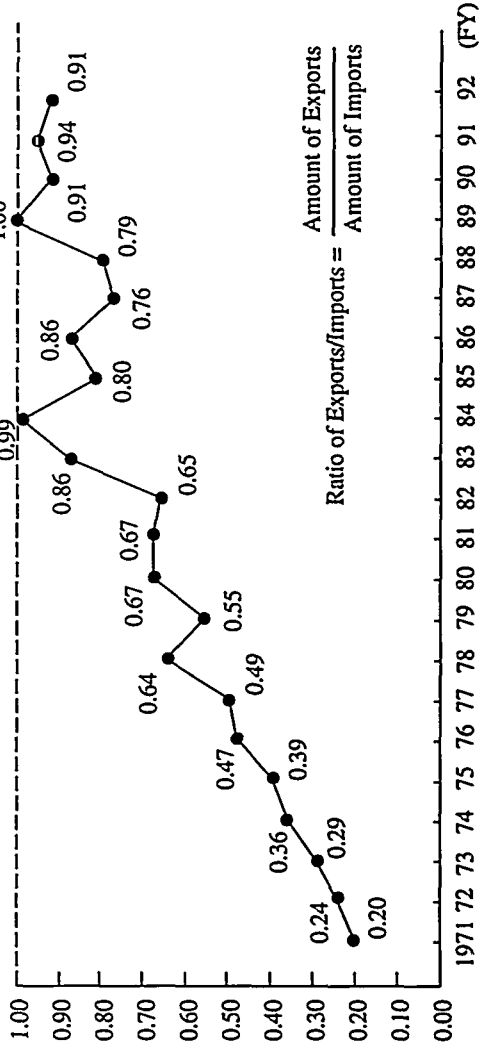


FIGURE 6(A).
AMOUNT OF TRADE IN TECHNOLOGY BETWEEN JAPAN AND THE UNITED STATES

Ratio of Exports/Imports = Amount of Exports / Amount of Imports

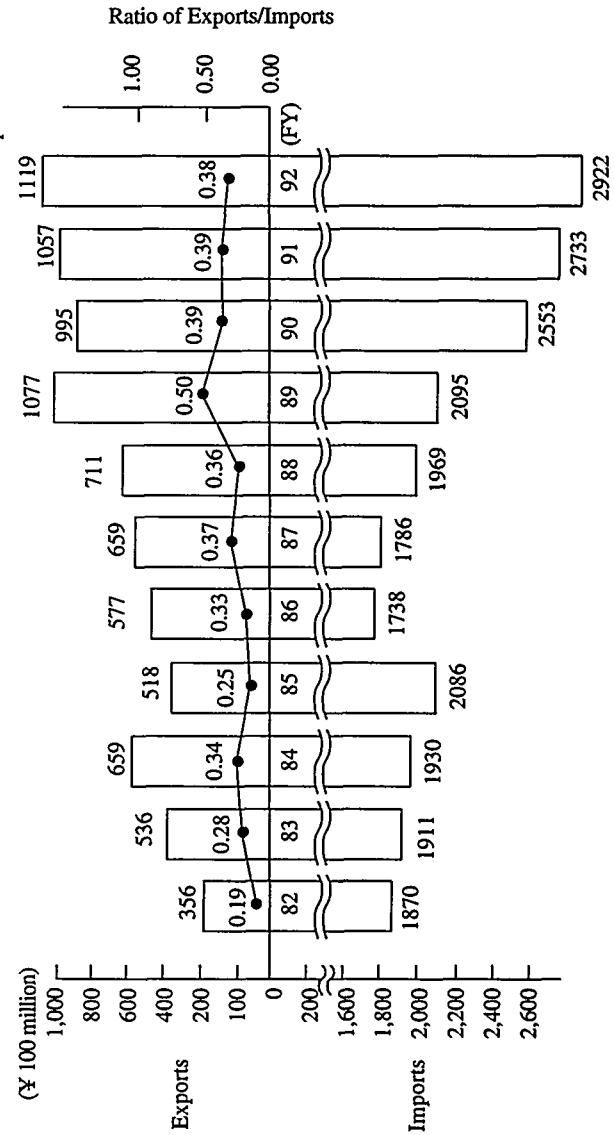
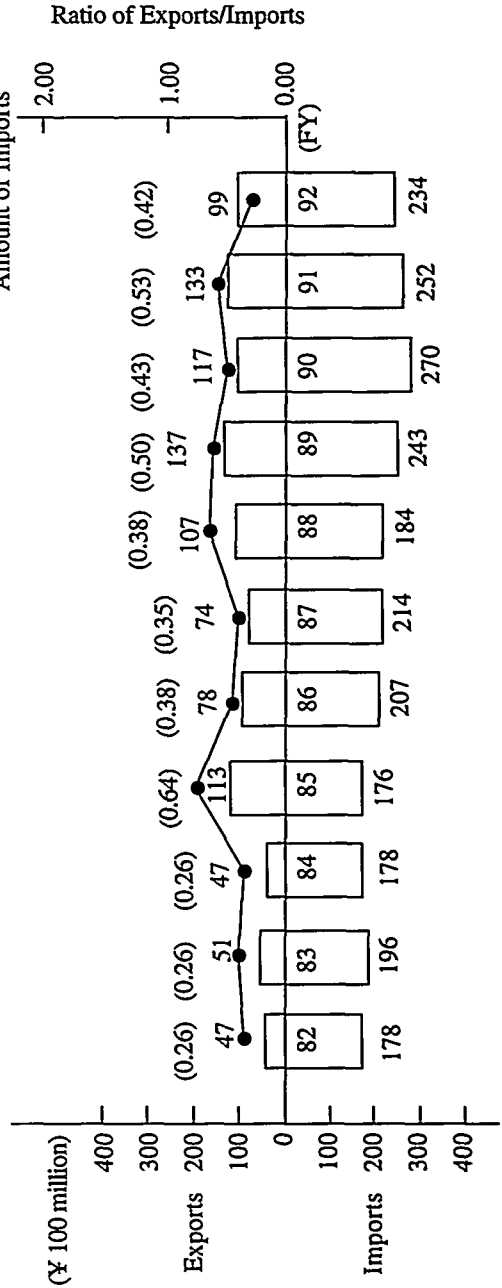


FIGURE 6(B).
AMOUNT OF TRADE IN TECHNOLOGY BETWEEN JAPAN AND GERMANY



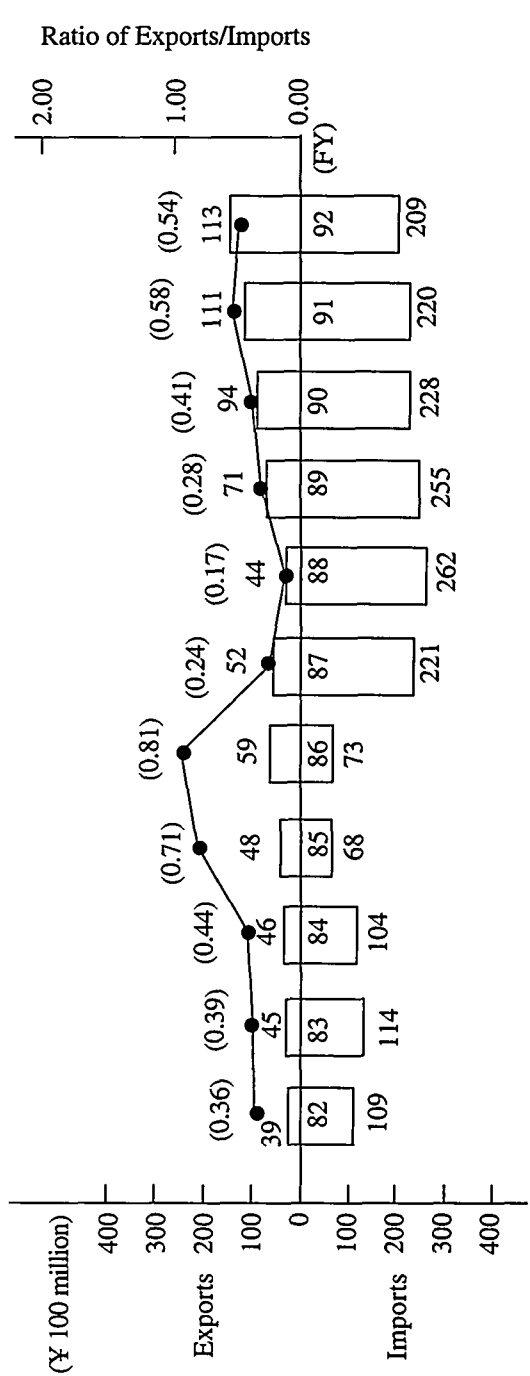


FIGURE 6(C).
AMOUNT OF TRADE IN TECHNOLOGY BETWEEN JAPAN AND FRANCE

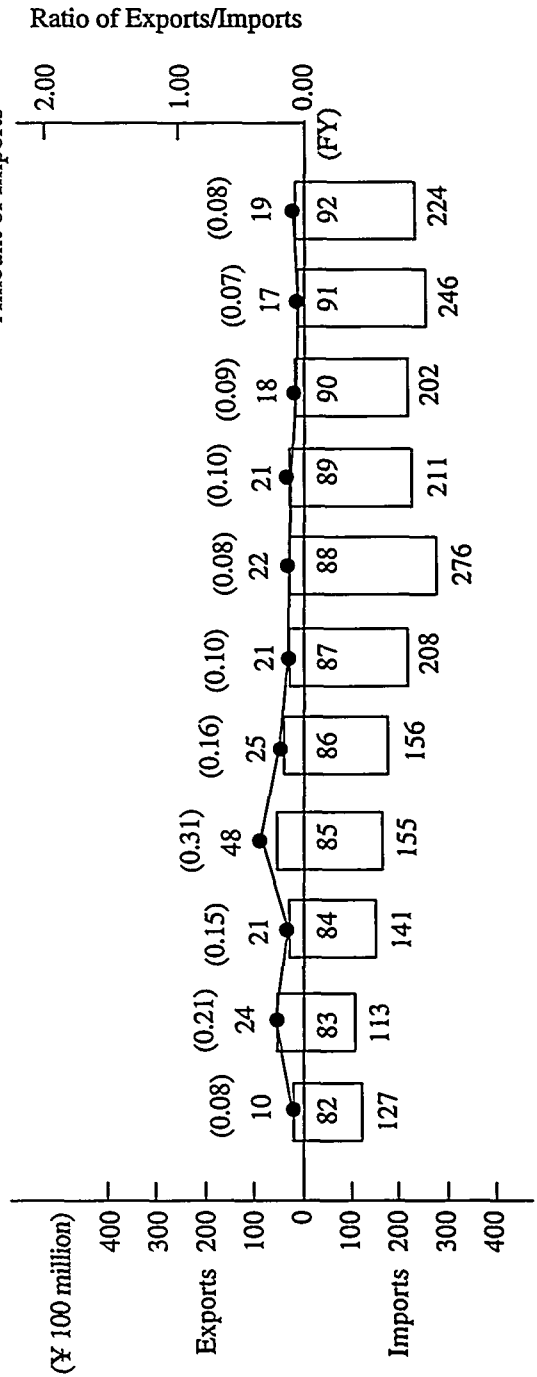


FIGURE 6(D).
AMOUNT OF TRADE IN TECHNOLOGY BETWEEN JAPAN AND THE NETHERLANDS

$$\text{Ratio of Exports/Imports} = \frac{\text{Amount of Exports}}{\text{Amount of Imports}}$$

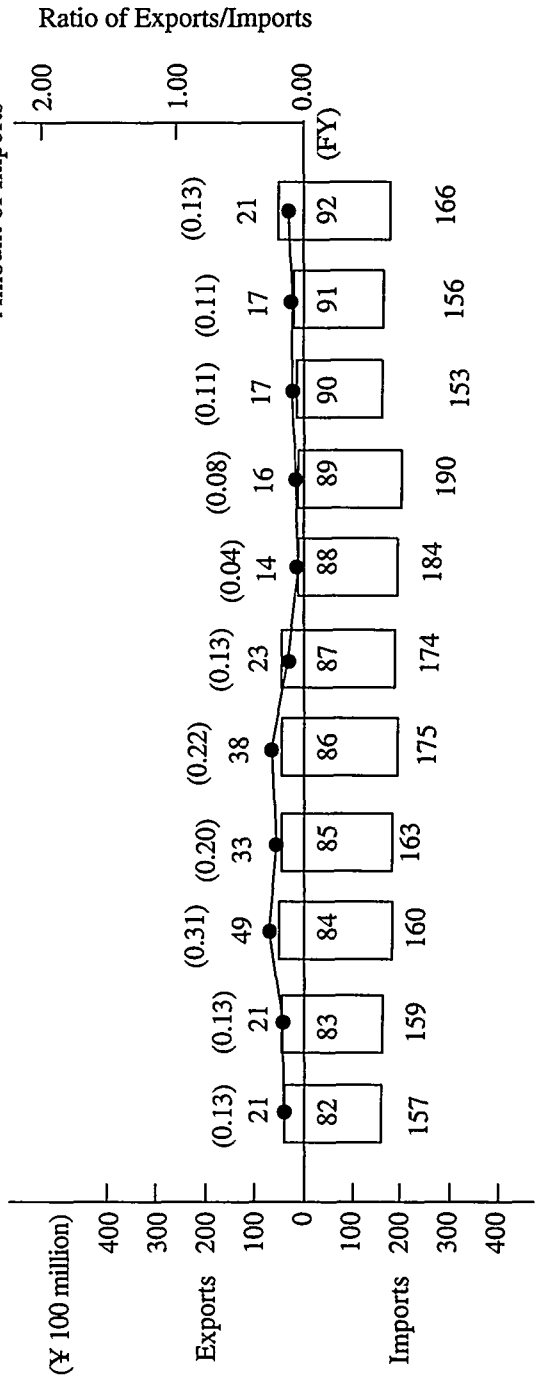


FIGURE 6(E).
AMOUNT OF TRADE IN TECHNOLOGY BETWEEN JAPAN AND SWITZERLAND

trary patent determinations. Recently, the Tokyo District Court held that Texas Instruments' integrated circuit manufacturing process patent did not cover integration using more recent technology such as MOSFET and LOCOS.[45] As a result of this decision, Japanese courts could have interpreted all pioneer invention patents to cover only disclosed embodiments, thereby excluding all future developments. Despite this holding, Japanese electronics companies have chosen to pay royalties for basic patents to Texas Instruments and other U.S. companies because they value and respect the importance of U.S. inventions as one of the basic building-blocks of current Japanese technology.

Those who disparage Japanese industry for its focus on the application and manufacture of technologies may simply have different values. A pioneering inventor who breaks new ground may find it difficult to accept that any subsequent improvements could be as valuable as the initial discovery. Yet a new material or product is often not commercially successful without improvements. Japan's contributions to the application and manufacture of technologies should be properly and fairly evaluated. The talents and facilities required for the commercial development of a basic innovation are often different from those required for application and manufacture, and one company or country cannot excel at every expertise.[46] Therefore, U.S. industry should appreciate the benefits of the division of labor existing between the United States and Europe on the one hand and Japan on the other.

A company pioneering a new invention tends to believe that it will obtain a monopoly for the manufacture of the material or device that it created. This expectation would not be realistic, however, under an intellectual property system that refuses to grant monopolies to manufacturers. Instead, the modern system encourages newcomers to enter the market by allowing them to improve technology. The goal of the modern intellectual property regime is not to secure monopoly privileges for inventors, but to encourage innovation by balancing the interests of pioneering inventors against those of

45. Fujitsu v. Texas Instruments, Judgment of Tokyo Trial Court, August 31, 1994, reported in HANREI JIHŌ (No. 1510) 35 (1995); HANREI TAIMUZU (No. 862) 108 (1995), *aff'd* Tokyo High Court, Sept. 10, 1997.

46. OKOUCHI, *supra* note 32, at 56.

competitors eager to enter the market by improving innovative technologies.

V. CONCLUSION

Contrary to popular belief, technology monopolies have always existed in Japan and are not foreign to Japanese culture. Japan chose to adopt a modern intellectual property system as a means of filling the void left by the removal of the pre-modern Japanese intellectual property system. Although U.S. and European technological innovation remains unsurpassed, Japan's decision to focus on the application and improvement of basic technology cannot be attributed to its culture, nor can its choice be seen as a barrier to intellectual property trade.