Temporal-Spatial Patterns of Wajima *Shikki* (Lacquer Ware) Artisans: Reproduction of Labor Force in a Traditional Japanese Industry

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Abstract

The purpose of this study is to examine migration patterns of labor force by vocational education in traditional industry regions. Although previous studies of traditional industry mainly discussed innovation, many traditional industries continue to apply traditional techniques for production. The author makes temporal-spatial analyses of the apprenticeship and migration patterns of skilled artisans in the Wajima *shikki* industry. The analyses lead to the following results. Apprenticeship in the Wajima *shikki* industry has been changed qualitatively by the increase of production, during which people from outside central Wajima entered the *shikki* industry. Therefore, the main function of apprenticeship shifted from "inheritance" of skill to "spread". Three migration patterns of artisans are extracted by the analysis of lifepaths. First, "stay" pattern includes inheritors who were born in central Wajima. The pattern reflects the basic function of apprenticeship before the growth of production. It preserves a spatial agglomeration of *shikki* firms in central Wajima. Second and third patterns include the artisans who were newcomers to the *shikki* industry, brought up with no connection to the industry. Among them, the artisans who were born outside central Wajima belong to the second pattern. It shows a "centripetal-centrifugal" pattern. Artisans who were born in central Wajima demonstrate the third "centrifugal" pattern. The two patterns contribute to the expansion of *shikki* firms' distribution.

Key Words: *traditional industry, apprenticeship, artisan, vocational education, migration, shikki (lacquer ware), Wajima*

I. INTRODUCTION

Studies of traditional industry have been accumulating in Japan. There are two main viewpoints. One perspective emphasizes the analysis of industrial enterprises to elucidate the productive structure and its changes¹⁾. The other studies the relationship between industry and region to identify regional conditions to form and maintain the industry²⁾.

Previous studies of traditional industry examine the impact of the introduction of modern manufacturing technology, new materials, and new products. Their interests are concentrated on innovation of production and modernization of traditional industries. They showed that tra-

ditional industry regions are existing by adopting mass production methods and reducing costs. By saving labor force and standardizing production processes, they have been able to replace traditional techniques with modern. Introduction of new materials and modern manufacturing facilities, such as plastics, chemical paints, and plastic injection machines have brought changes in the main *shikki* (lacquer ware) industry regions. Baba (1981, 1986, 1989, 1990) clarified particular changes in structure of production and distribution of firms in the main Japanese *shikki* industry regions. Goda *et al.* (1985) showed that the Hida *Shunkei shikki* industry, an example of the tradition-continuance type that maintained traditional manufacturing techniques, had two parallel struc-

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tures of production: mass production of cheap items and handicraft of high-quality ones.

However, many traditional industries in Japan maintain traditional production techniques. They have increased high grade goods' production, without introducing new techniques. Geographical studies discussing such characteristics of this industry are rarely found, and they are more studied by sociologists (Sato and Haneda, 1964) or historians of technology (e.g., Koyano, 1979). Thus, the author focuses on a traditional industry which has maintained traditional production techniques.

Because traditional technique largely depends on handicrafts, it is indispensable for this industry to secure skilled labor force. While labor force is an element that characterizes a region, it is an index that shows the relationship between region and industry (Miyakawa, 1977). Thus, the analysis of training for skilled artisan leads to understanding of the labor basis in the traditional industry. In industrial geography, the analysis of the labor force is a form of research which connects region and industry (Aoki, 1970). While some studies are concerned with the structure of regional labor markets (Okahashi, 1978) and labor market zones (Tomozaawa, 1989a, b), other studies focus on labor force as a regional base (Akahane, 1975, 1980a, b). Because many studies focus on the regional bases of the industry, the author selected the latter viewpoint. Thus this study examines the traditional industry in its relationship to the region by analyzing the demand, supply, and reproduction of the labor force.

Most traditional industries train unskilled workers to become skilled artisans within enterprises. The skill training, or vocational education on the job, is necessary for the labor force to raise the level of ability. The vocational education system has the function of gathering workers, converting them into skilled artisans, and relocating them regionally. Therefore, the author expects to find patterns of migration in the labor force in this system. According to Kawada (1992), geographical studies of education have two aspects: the political geographical approach and the social one. The latter includes the behavioral analysis of population migration (Wiltshir, 1980; Ishikawa, 1986;

Kawada, 1993). Although they analyze education activities in school, they have paid no attention to vocational education in enterprises.

The author adopts a "lifepath" concept to observe migration of workers, because vocational education is usually accompanied by temporal-spatial migration. The lifepath is a method to identify human activities both temporarily and spatially. It observes spatial activities from birth to death as a series of temporal-spatial migration (Takahashi, 1990). Robson (1973) illustrates that there is a relationship between age and the possibility of a migrant using the concept of stage in the life cycle. Woods (1979) also suggests that, in general, migrations accompanied by household formation, family formation, and retirement concentrate in specific age ranges. Typical provable studies using the lifepath are Ozeki and Takahashi (1984), Kawada (1993), and Tanaka (1994) in Japan.

The purpose of this study is to examine migration patterns of labor force by vocational education in traditional industry regions, in which development has continued without achieving modernization and traditional production technology is maintained.

This study applies the following procedure. First, traditional industry is classified by production technique to identify how Japanese traditional industries heavily depend on traditional techniques and to select the study area. In the classification, the author adopts the data published by the Association for the Promotion of Traditional Craft Industries. The selected area and industry are then briefly outlined (Chapter II). Second, the characteristics of an apprenticeship as a vocational education system in a traditional industry is described. Changes in the apprenticeship that serves as a reproduction system for artisans are clarified by analysis of skilled artisans' attributes (Chapter III). Third, Chapter IV presents migration patterns of artisans in the apprenticeship system by the temporal-spatial analysis of "lifepaths" using questionnaire data.

II. OVERVIEW OF TRADITIONAL JAPANESE INDUSTRIES

1. Classification of traditional Japanese industries by technical aspects

An appropriate study area to achieve the above purpose needs to be a productive traditional industry region that continues to apply traditional techniques. This section classifies traditional industry regions in Japan to select an appropriate study area.

Traditional industry regions that originated before the Meiji era came to have different characteristics, depending on the conversion of demands and changes in lifestyle or introduction of modernized production methods. Some regions declined with the reduction of demand, while others continued to exist by introduction of modern production techniques or conversion of product items. Some regions also continued and succeeded in using the traditional production processes and items.

One of the elements characterizing traditional industry is the continuance of handicraft production techniques established before the Meiji era. The term "traditional industry" as opposed to modernized industry connotes a long historical background (Ueno, 1986). The existence of techniques and skills before modernization is an index to distinguish traditional industry both from indigenous industry originating after modernization and from modernized industry transferred from overseas. The Ministry of International Trade and Industry designates traditional craft industries based on the Law Concerning the Promotion of Traditional Craft Industries. One of the prerequisites for designation is "applying traditional techniques or skills³⁾". Because its classification depends on traditional techniques and skills, it is possible to understand the degree of dependence on traditional or modernized production in each traditional industry region.

Table 1 shows the dependence on traditional techniques and skills in traditional industry regions. The table presents 90 regions that produce more than one billion yen a year among 169 traditional craft industry regions designat-

ed by the above prerequisites. Because the prerequisites are almost synonymous with a definition of traditional industry, the author identifies traditional craft industries as traditional industries, and the designated regions as traditional industry regions. The data adopted from *Conspectus of the traditional crafts (Zenkoku Dento-teki Kogei-hin Soran)* show the amount of production of traditional craft items in each region. The total production means amount of production in a traditional craft industry including items produced by traditional and modernized methods. The rate of traditional crafts means the percentage of traditional craft items in total production of the traditional craft industry. It shows the dependence on traditional techniques and skills. The author divided traditional industry regions into three categories by the rate of traditional craft. Because the author attempts to emphasize the technical dependence of each region, the division of percentages makes extreme cases (80 percent or more and less than 20 percent) stand out.

In 24 regions the rate of traditional crafts is 80 percent or more. These regions can be named traditional technique-succeeding regions. In this category, the six regions of Kanazawa *haku* (gold foil, Ishikawa), Honba Oshima *tsumugi* (silk textile, Kagoshima and Miyazaki), Kaga *yuzen* (dyed goods, Ishikawa), Wajima *nuri* (lacquer ware, Ishikawa), Kyo and Kiyomizu *yaki* (pottery, Kyoto), and Kyo *komon* (dyed goods, Kyoto) produce at least 10 billion yen a year. Although the category that is 80 percent or more includes various items, Buddhist altar production regions are eliminated because of the introduction of wood process machines and mass production system.

Thirty-six regions in which the rate of traditional craft is between 20 and 80 percent have both traditional and modern techniques. Nineteen regions in this category produce only one to two billion yen. In contrast, Nishijin *ori* (silk textile, Kyoto), produces more than 300 billion yen, 44.9 percent of the production being traditional craft.

Modern techniques have almost replaced the traditional ones in regions having less than 20 percent of traditional craft. These regions can be defined as modern technique-replaced re-

Table 1. Production in traditional craft region and rate of traditional craft 1992

Rate of traditional craft Total production (billion yen)	80% or more	20 - 80%	Less than 20%
10 or more	43 Dye Kaga yuzen 45 Lac Wajima nuri 48 Mtr Kanazawa haku 56 Dye Kyo yuzen & komon 61 Pot Kyo & Kiyomizu yaki 89 Tex Honba Oshima tsumugi	44 Pot Kutani yaki 50 Lac Echizen shikki 53 Pot Shigaraki yaki 57 Dye Kyo kanoko shibori 55 Tex Nishijin ori 77 Sta Kumano fude 84 Pot Imari & Arita yaki	7 Lac Aidzu nuri 12 Do! Edo kimekomi ningyo 17 Bam Edo wazao 72 Lac Kishu shikki 40 Mtl Takaoka doki 21 Tex Tokamachi kasuri & chidjimi 36 Pot Mino yaki 39 Pot Yokkaichi banko yaki 46 Lac Yamanaka shikki 79 Lac Kagawa shikki 87 Pot Hasami yaki
5 - 10	25 Lac Kiso shikki 29 Dye Arimatsu & Narumi shibori 75 Pot Bizen yaki 81 Tex Hakata ori	31 Pot Tokoname yaki 33 Stn Okazaki sekkohin 58 Dye Kyo kuro montsuki zome 64 Oth Kyo sensu & uchiwa 66 Mtl Sakai uchihamono 68 Bud Osaka butsudan	2 Mtl Nanbu tekki 10 Tex Kiryu ori 13 Tex Tama ori 16 Mtl Tokyo ginki 34 Bud Nagoya butsudan 51 Pap Echizen washi 54 Bud Hikone butsudan 71 Oth Banshu kebari 90 Bud Kawanabe butsudan
2 - 5	1 Lac Tsugaru nuri 8 Tex Yuki tsumugi 15 Dye Tokyo tegaki yuzen 22 Wod Kamo kiri tansu 35 Sta Toyohashi fude 42 Wod Inami chokoku 83 Do! Hakata ningyo	9 Pot Mashiko yaki 32 Wod Nagoya kiri tansu 38 Brd Iga kumihimo 80 Pot Tobe yaki	41 Lac Takaoka shikki 52 Tex Omi jofu 60 Brd Kyo kumihimo 65 Stn Kyo ishi kogelhin 76 Bud Hiroshima butsudan 88 Bam Beppu 'take zaiku
1 - 2	5 Tex Oitama tsumugi 6 Mtl Yamagata imono 14 Dye Tokyo some komon 37 Lac Hida shunkei 67 Wod Osaka karaki sashimono 73 Wod Kishu tansu 85 Pot Karatsu yaki	3 Lac Kawatsura shikki 4 Wod Kaba zaiku 11 Wod Kasukabe kiri tansu 18 Lac Kamakura bori 20 Tex Shiozawa chidjimi & tsumugi 23 Bud Nigata & Shirone butsudan 26 Bud Iyama butsudan 27 Stn Koshu suisho kiseki saiku 28 Oth Koshu inden 30 Pot Akadzu yaki 47 Bud Kanazawa butsudan 50 Mtl Echizen uchi-hamono 59 Oth Kyo nui 62 Lac Kyo shikki 63 Wod Kyo sashimono 69 Pot Tanba tachikui yaki 70 Sta Banshu soroban 78 Oth Fukuyama koto 86 Pot Mikawachi yaki	19 Tex Odiya chidjimi & tsumugi 34 Bud Nagaoka butsudan 74 Pap Inshu washi 82 Tex Kurume kasuri

Bmb Bamboo ware	Brd Braid	Bud Buddhist altar	Do! Dolls	Dye Dyed goods
Lac Lacquer ware	Mtl Metal Ware	Mtr Craft materials	pap Japanese paper	Pot Pottery
Sta Stationary	Stn Stone ware	Tex Textile products	Wod Wood working	Oth Others

Data source: Association for the Promotion of Traditional Japanese Crafts, 1993.

gions. Large scale traditional industry regions often belong to this category. Regions in this category occupy 45.8 percent of regions producing at least 100 billion yen a year. In con-

trast, this category holds only 13.3 percent of regions producing from one to two billion yen a year. The large-scale regions include regions adopting mass production with modern tech-

X Rate of traditional craft (Production of traditional craft / Total production × 100)

y Total production (Unit; billion yen)

Numbers of circles are equivalent to numbers of Table 1.

Figure 1. Distribution of traditional industries in Japan, 1992.

Data source: Association for the Promotion of Traditional Japanese Crafts, 1993.

niques.

While most of the large-scale regions exclusively apply modern techniques, Nishijin *ori* has both traditional and modern techniques. Wajima *nuri* and Kaga *yuzen* maintain traditional skills. The regions that have at least 80 percent of traditional craft occupy 26.7 percent of all regions. Summing up the regions that have at least 80 percent of traditional craft, approximately 70 percent of the regions depend on traditional techniques and skills. Only a few regions adopted modern production techniques, although partial introduction progressed in the period of rapid economic growth.

Figure 1 shows distribution of traditional craft industries. The numbers of circles are equivalent to the numbers of Table 1. Several industries which depend for 20 to 80 percent of production on traditional techniques are mainly distributed in the central part of Japan, especially Aichi (Nos. 29 to 35) and Osaka (Nos. 66 to 68). On the contrary, traditional industries which have less than 20 percent of the rate dominate in eastern Japan. Five among ten traditional industries in Kanto district (Nos. 8 to 18) depend for less than 20 percent of production on their traditional techniques. Generally,

traditional industries in central and western Japan have higher dependency on traditional techniques than in eastern Japan. Especially Kyoto (Nos. 56 to 65) and Ishikawa (Nos. 43 to 48) include traditional industries which have large production and high dependency on traditional techniques such as Kyo and Kiyomizu *yaki*, Kanazawa *haku*, and Wajima *nuri*.

In order to choose a traditional industry that continues and develops without modernization, it is appropriate to select one from the regions in which 80 percent or more production is traditional craft. The author selected Wajima *shikki* industry⁴⁾ in Wajima City, Ishikawa Prefecture. Wajima City is the fifth largest *shikki* production region, coming after Kainan (Wakayama Prefecture), Takamatsu (Kagawa Prefecture), Yamanaka (Ishikawa Prefecture), and Aidzu-Wakamatsu (Fukushima Prefecture). However, Wajima *shikki* industry specializes in traditional high grade *shikki* production, and has the largest *shikki* production by traditional technique.

2. Wajima *shikki* industry

Wajima City occupies the northern edge of the Noto Peninsula in central Japan (Figure 2).

Figure 2. Study area.

Hills ranging from 200 to 400 meters above sea level cover approximately 70 percent of the Wajima City area. Wajima City was formed in 1954 by uniting former Wajima Town with a town and six villages surrounding it. Approximately 40 percent of the population of Wajima City, 12,815 people, live in such built up areas as Kawai-machi, Fugeshi-machi, Wajimazaki-machi, Ama-machi, and Hori-machi. Among 4,172 employees of manufacturing industry in Wajima City, 2,869 were engaged in the *shikki* industry in 1990⁵⁾.

Although the origin of Wajima *shikki* is unknown, the *shikki* manufacturers organized a guild called *Daikoku-ko* in the Tenmei period (1781–1788), and 66 manufacturers who sold *shikki* existed in the former Wajima town area in 1797 (Committee of Compilation of the History of Wajima, 1973). The *shikki* industry was already an established business in Wajima in the eighteenth century.

The production of Wajima *shikki* almost depends on handicraft. It includes about 60 processes (Wajima City Office, 1980). Because of

the materials of *shikki*, including raw lacquer and woods, change easily in quality by temperature, humidity, and sunshine, mechanization is difficult. Most of the production processes depend on the artisans' skill and experience. The Wajima *shikki* industry, which adopts hard priming coating method named *honkataji*, has more processes than in the other *shikki* industries. Wajima *shikki* is thus regarded as high grade and expensive.

The production processes of the Wajima *shikki* consist of wood body making (*kiji*), varnishing (*kyushitsu*), and surface decorating (*kashoku*) (Figure 3). Even today, each process uses traditional methods. The wood body making process forms woods in ordered shapes. By the kinds of woods and processing methods, it is called joinery (*sashimono kiji*), hollowing (*ho kiji*), turnery (*wan kiji*), or board rounding (*magemono kiji*)⁶⁾. The varnishing process has three steps: priming (*shitaji*), middle coating (*nakanuri*), and final coating (*uwanuri*). Priming is the method that coats *shitaji* lacquer, a mixture of lacquer, rice paste, and ground diatomite

Figure 3. Production processes of Wajima *shikki*.

An arrow means a flow of processes.

Data source: Wajima City Office, 1980.

Table 2. Number of *shikki* firms by scale of workers, in Wajima, 1988

Categories	Number of workers				Total
	1-5	6-10	11-50	51-	
<i>Nushiya</i>	181	24	22	3	230
<i>Kaiuketori</i>	130	0	0	0	130
<i>Makie</i>	169	3	0	0	172
<i>Chinkin</i>	69	0	0	0	69
<i>Roiro</i>	41	1	0	0	42
Joiner	34	0	1	0	35
Hollowware maker	8	1	0	0	9
Turner	15	0	0	0	15
Board rounder	10	0	0	0	10
Chopsticks maker	54	6	2	0	62
Box maker	27	0	0	0	27
Total	738	35	25	3	801

Data sources: Author's field survey and a list in the Wajima Chamber of Commerce and Industry.

powder (*jinoko*)⁷⁾, from three to six times by spatula. After drying the varnished material from one to three days, half-finished goods are ground in grinding process⁸⁾. Middle and final coating are methods to paint refined lacquer by brush. In order to avoid dusts and changes of air conditions, the final coating is processed in a closed room. The drying period of lacquer requires at least five or six months of varnishing process. The surface decoration is a final process to decorate the surface. The surface decoration consists of *makie* (sprinkled lacquer), *chinkin* (inlaid work with gold), and *roiro* (polishing) methods⁹⁾. Usually, a Wajima *shikki* has two or more surface decoration methods on its surface.

In 1988, 801 firms were related to Wajima *shikki* (abbreviated as *shikki* firms in the following) in Wajima City (Table 2). The *shikki* firms

consist of eleven categories: *nushiya*s, *kaiuketori* subcontractors, *makie* makers, *chinkin* makers, *roiro* makers, joiners, hollowware makers, turners, board rounders, chopstick (*nuribashi*) makers, and box (*hako*) makers. The *nushiya* is an organizer of the Wajima *shikki* industry. It is not only a processor of the varnishing part, but also a wholesaler or retailer of *shikki*. The *kaiuketori* subcontractor is a maker that processes a part of the varnishing on order from *nushiya*. The largest category is that of the *nushiya*s with 230 firms. Next largest is that of the *makie* makers, total number of surface decoration firms (including *makie*, *chinkin*, and *roiro* makers) reaches 283.

Among 801 *shikki* firms, 738 have less than five workers. All *kaiuketori* subcontractors, *chinkin* makers, turners, board rounders, and box

Table 3. Production, firms, and employees in the Wajima *shikki* industry, 1962–1989

	Year:	1962	1965	1968	1971	1974	1977	1980	1983	1986	1989
Amount of products (hundred million yen)		13	18	19	66	91	110	150	140	140	161
Number of establishments		NA	NA	458	392	591	603	769	800	800	869
Number of employments		NA	NA	1,384	1,447	1,825	2,020	2,550	2,745	2,801	2,869

NA: Data not available.

Data source: The Cooperative of Traders and Manufacturers in Wajima *Shikki*.

makers have less than five people. The *nushiya* is the only category which includes relatively large firms, although only three of them have more than 51 persons.

The production of the Wajima *shikki* has rapidly increased since the mid 1960s (Table 3). From 1968 to 1980, it increased from 1.85 to 15.0 billion yen, and reached 16.1 billion yen in 1989. Particularly from 1968 to 1971, it increased 3.5 times. During the same period, the number of firms and workers have also increased constantly. The firms increased from 458 in 1968 to 869 in 1989, and workers increased from 1,384 to 2,869 (Suyama, 1992).

III. CHARACTERISTICS OF APPRENTICESHIP AND ITS CHANGE

Because most production of Wajima *shikki* depends on handicrafts even today, maintaining and training of skilled artisans is crucial for the continuance and development of the region. From where were the artisans for *shikki* production supplied? How were they trained?

Chapter III and IV examines the reproduction process of the skilled artisans by vocational education in the Wajima *shikki* industry. Some characteristics in the training of the artisans are identified. Migration patterns of the artisans are also elucidated in their reproduction processes. This chapter clarifies some characteristics of the reproduction process by vocational education, while examining attributes of the artisans.

1. Reproduction of artisans by apprenticeship

The production of the Wajima *shikki* consists of a sequence of handicrafts, except for a part of the wood body making process. Therefore, the production is largely dependent on highly skill-

ed artisans. It is indispensable for the Wajima *shikki* industry to train skilled artisans.

According to Kiyokawa (1987), "a technique" means "a systematic aggregation of knowledge and information, organized for the particular production." Techniques thus can be taught through manuals or texts. On the contrary, Renold (1928) defined a skill as "any combination of mental and physical qualities which require considerable training to acquire." Saito (1990) also defines skill as "an ability to perform a duty." Skill is not only knowledge, but also the total ability of workers that can respond to every situation. Such an ability can be acquired only by experience in practice. These definitions show that a skill is one of ability of workers. More (1980) suggests that skill can be regarded as an attribution to workers. Skill is an ability belonging to workers' attribution, while technique means aggregation of elements to carry out industrial production.

Repetition is the most efficient method to gain the skills involved in Wajima *shikki* production. The Wajima *shikki* industry reproduces skilled artisans. Every category of Wajima *shikki* production requires skilled and complex operations, which cannot be acquired without a long learning period. Because small *shikki* firms cannot pay enough wages to unskilled workers, the workers must work as apprentices from low wages.

Kyocho kai (1936) and Sato *et al.* (1962) examined apprenticeship in Japan. Their studies were based upon the preconception that apprenticeship is a form of a low wage labor force which fell victim to the capitalistic modernization processes. They claimed that apprenticeship had to disappear in the future to liberate unskilled worker with low wages. By contrast, however, some recent studies of economic history appreciate apprenticeship. They suggest

that apprenticeship is continuing in another form through industrialization (More, 1980). The main academic interest has shifted to the efficiency of apprenticeship as a skill education¹⁰. Apprenticeship continues and functions as a skill training system through which highly skilled artisans are reproduced in every category of the Wajima *shikki* industry.

All artisans of the Wajima *shikki* industry were trained to learn skills as apprentices for four years¹¹. The apprentice learns higher level skills gradually by observing his master and elder artisans' works, and by repeating of practices on actual production. The process of training is common to all categories related to the *shikki* production.

An apprentice is trained to be an artisan under the apprenticeship. After the training and the sequential employment as an artisan, he becomes independent or inherits his father's profession. Independence or inheritance is the major purpose for the artisans. An expected path is that they will become independent artisans after being trained for four years and employed in the following years.

An apprentice learns skills step by step, from easy operation to difficult process. In the case of varnishing, an apprentice begins from an easy priming process on a flat board. The priming process on a flat surface differs from that on a curved surface in the method of coating and in the form of spatula. Combination of lacquer and time of drying obviously have seasonal variation, and it is necessary to learn the total system of knowledge and skills totally. The apprentice earns higher skills from priming to middle coating during four years. Because final coating is a delicate skill, a master of artisans permits only talented artisans to perform this work. An apprentice has many opportunities to observe the techniques of his master and so he tends to receive strong influence.

The relationship between an apprentice and his master is not limited to the employer-employee bond, but is extended to other aspects of life, like a parent-child relationship. When the training is finished, they celebrate the completion with a ceremony. In the ceremony, they pledge to be a parent and a child over cups, and the master presents the artisan with a suit or

kimono. Similarly, the artisans who trained under the same master become fellow disciples called *deshi-kyodai*. When an artisan attends a ceremony such as a wedding or funeral of another fellow disciples, his seating position is among those of the fellow disciples's family. The connection between master and apprentice and among fellow disciples is so strong that they carry out annual events and ceremonies strictly. Fellow disciples organized many get-togethers in Wajima. The members often go on trips and have parties, to which the master is always invited¹². The apprenticeship thus includes aspects of community as well as the system for skill succession.

Although apprenticeship maintains the functions for skill succession of *shikki* production, partial changes are observed under the restructuring of the organization in production and distribution¹³. Ishikawa Prefecture and the Co-operative of Traders and Manufacturers in Wajima *Shikki* established schools to teach skills and techniques for *shikki* production in the mid 1960s. They are Wajima *Shikki* Cooperative Vocational School¹⁴, Training Institute of Lacquer Craft Technique¹⁵, and Course of Interior in Wajima Vocational High School¹⁶ in Wajima City. They function as educational facilities (Harima and Kokon, 1976). Establishments of the schools mean that the Wajima *shikki* industry begins to depend for reproduction of artisans on external facilities.

Apprenticeship continues as a system for the reproduction of artisans, and is the labor base of Wajima *shikki* industry. It gathers unskilled workers to be artisans, and reproduces skilled artisans.

2. Attributes of artisans

Patterns in migration of artisans can be identified by examining their origins, the places to learn skills, and the locations of their firms after independence. To clarify the patterns, the authors carried out a questionnaire survey on surface decoration artisans, who belong to the cooperatives or work in two major *nushiya*s in August 1991¹⁷. In this section, *makie*, *chinkin*, and *roiro* are categorized as surface decoration makers.

Surface decoration makers are examined be-

cause the numbers of firms and employees have been increasing for nearly two decades. They also have many young artisans. Therefore, this most developed section is expected to reflect the development of the Wajima *shikki* industry. Varnishing and wood body making parts are assumed to show results like surface decoration, because they carry out the same training by apprenticeship.

The questions included sex, age, the last school graduated, father's profession, occupational career, and residential moves. Of the survey distributed to 412 artisans, 252 responded (62.1%).

Figure 4 clearly shows that the artisans from 30 to 44 years old occupy a large proportion in the surface decoration artisans. Female artisans are fewer than male and mainly below 49 years old. In the late 1960s, when the artisans of 40 to 44 years of age were young and were under their masters for training, *shikki* production began to increase. The artisans between 30 and 44 years old occupied a large proportion because many workers took part in the *shikki* industry in this production increase period.

The number of artisans in each category above 45 years old stays at about 10, because the number of apprentices was stable and because the Wajima *shikki* industry made simple reproduction of artisans before the 1960s. The artisans from 20 to 29 are relatively few. This does not mean a lack of successors; many apprentices have not finished their training in this generation¹⁸.

The birthplaces of the artisans and their present residences are shown in Figure 5. The

Figure 4. Population pyramid of surface decoration artisans, 1991.

Data source: Questionnaire in August, 1991.

former Wajima Town, in which all *shikki* firms were located till the late 1960s, is the birthplace of 161 artisans. The former Wajima Town is the present residential place of fewer artisans (129). Artisans' birthplaces are distributed all over the city including outside the former Wajima Town. Particularly, many artisans were born in the southern areas of the former Wajima Town. Ishikawa Prefecture, except Wajima City, and outside Ishikawa Prefecture have some artisans¹⁹. The birthplaces of about 40 percent of them are distributed all over the city and out of Wajima City, while the former Wajima Town is the center.

Residential places are distributed within a smaller area than birthplaces. The center of distribution is the former Wajima Town and its suburb. Particularly, the areas with 10 to 20 residents are distributed around the former Wajima Town. In short, present residential places of surface decoration artisans are mainly the former Wajima Town and its suburbs.

The former Wajima Town, as the largest

Figure 5. Birthplace and place of residence of surface decoration artisans in Wajima City, 1991.

Data source: Questionnaire in August, 1991.

birthplace and residential place of artisans, is the traditional agglomeration region of the *shikki* firms. The next largest number of residents live around the former Wajima Town. More than ten artisans live in each area. They are also the areas where the *shikki* firms have increased for the latter half of the 1960s (Suyama, 1993). Furthermore, most other areas have fewer locations of firms, and less than 5 artisans of natives and residents.

The analysis in Figure 5 lead to the division of Wajima City into three regions (Figure 6). (1) The urbanized former Wajima Town is termed Central Wajima. This is the former agglomerated area of the *shikki* firms, and the largest birthplace and present residential region. (2) Suburban Wajima is the area which surrounds Central Wajima. It is the area in which many firms were established in the latter half of the 1960s. It now has the second largest number of artisans next to the former Wajima Town. (3) Rural Wajima, which is the rest of the Wajima municipal area. It has fewer firms and functions as the supply area of artisans. A distinction between suburban and rural Wajima exists in the number of residents. One area including more than ten residents belongs to suburban Wajima. Another area belongs to the rural Wajima²⁰. Additionally, (4) outside Wajima is essentially similar to the rural Wajima, in respect of labor supply function, but it shows the extent of the area supplying artisans.

The general course from unskilled worker to skilled artisan at the present is described. According to the questionnaire, most people entered training at the age of 18, when they grad-

Figure 6. Regional division of Wajima City, 1991.
Data source: Questionnaire in August, 1991.

uated from high school. Although graduates of universities and junior colleges are increasing in recent years, the majority of the artisans do not receive higher education. Average years required to be independent from the beginning of the training are 8.2 years. The average age of independence is 27.4 years old. The artisans were employed by surface decoration makers for four years after the four years of training. Therefore, it is a typical path of an artisan to receive training for four years after the graduation of high school and to be employed as an artisan for four years before independence. Artisans who inherit the father's profession are usually trained by their parents after graduation from high school. However, some of them are trained in other masters' atelier and begin to work with their parents soon after finishing training.

Figure 7 shows the fathers' professions of the artisans. The father's profession is one of the motives for the child to select his profession. The artisans who inherit the fathers' profession are 61, or 24.2 percent of all surveyed artisans. Even if we add 58 artisans whose fathers are engaged in other professions of *shikki* industry, only 119 persons, or 47.2 percent of all artisans, are from homes related to this industry. More than half of artisans have grown up in homes that have no relations to *shikki* industry. In the generations aged 44 or younger, the tendency is obvious. More than 60 percent of the artisans' fathers are not engaged in *shikki* production. In other words, the Wajima *shikki* industry took

Figure 7. Number of surface decoration artisans by age and their fathers' professions, 1991.

'Other shikki industry' includes father who engaged in another surface decoration that his son engages.
Data source: Questionnaire in August, 1991.

Figure 8. Number of surface decoration artisans by age and birthplace, 1991.
Regional division follows that in Figure 6.
Data source: Questionnaire in August, 1991.

many unskilled workers from homes having no relation to *shikki* as apprentices in the 1960s because of a serious shortage of labor. On the other hand, more than half the artisans aged 45 or older who entered before 1960, are inheritors of their fathers' profession.

Figure 8 shows relationship between artisans' age and their birthplace by region defined in Figure 6. From 80 to 90 percent of artisans above 45 years old were born in central Wajima. In contrast, artisans aged 44 or younger were born in other regions, mainly rural Wajima. In some generations aged 44 or younger, artisans who were born in regions except central Wajima occupy more than half. Furthermore, artisans born the outside Wajima increase in the categories aged 44 or younger. There are no artisans born there aged 45 or younger. The artisans who were born in suburban and rural Wajima grew up in the homes having no relations to *shikki*, and took part in this industry by the stimuli from the increase of the *shikki* production.

3. Qualitative change of apprenticeship

More than half of artisans aged 45 or older are inheritors and born in central Wajima. The number of male artisans aged 55 or older do not differ by generations. There are no female artisans in some generations (Figure 4). In contrast, artisans born in the regions except central Wajima in homes having no relation to *shikki* are dominant in the generations aged 44 or younger. Most artisans between 40 and 49 years old took part in the *shikki* industry in the

1960s. It was the period of increasing production, and expanding distribution of the *shikki* firms.

These facts elucidate a qualitative change of apprenticeship during the 1960s. The original purpose of apprenticeship in Wajima used to be the inheritance of the home profession by the oldest son. In other words, it was an inheritance of the skills from the father to the son. Skill training for apprentices who have grown up in homes having no relation to *shikki* used to be a secondary function. As newcomer from home having no relation to *shikki* increased rapidly after 1960s, their number surpasses that of the inheritors. As a result, the purpose of apprenticeship changed. The succession of skill by inheritance, which was the original and most important function, falls into second place. In contrast, skill training for everyone became the first function.

In other words, the function of apprenticeship in the Wajima *shikki* industry changed qualitatively from simple reproduction of inheritors to expanded reproduction of artisans for everyone. The fact that the birth places of artisans differ by generations indicates that the change of the apprenticeship involves not only the shift of quality of apprentices, but also an expansion of labor supplying areas. The Wajima *shikki* industry could earn a larger labor supply.

IV. MIGRATION PATTERNS OF ARTISANS BY REPRODUCTION UNDER APPRENTICESHIP

This chapter identifies migration patterns of artisans by analyzing their temporal-spatial behaviors from young unskilled worker to matured skilled artisans. As a viewpoint for the analysis, the time-spatial migration of an artisan is illustrated as a lifepath. The lifepath data obtained by questionnaire are classified to extract the migration patterns.

1. Making a lifepath graph

Although the author limits the object of study to surface decoration artisans, their carriers differ from one another. It is therefore difficult to analyze them quantitatively, even if

their time-spatial migrations are drawn. After finishing training, for example, an artisan may engage in another job for several years and may return to be a surface decoration artisan again²¹⁾. This study only analyzes the temporal-spatial behavior, that is related to reproduction of surface decoration artisans. Therefore, it is necessary to extract some opportunities which they have commonly experienced in the process after the start of training.

In this study, the author names such opportunities as "passing points." There are three gateways that are indispensable to become an artisan, as "entering" training, "independence," and "inheritance"²²⁾. Adding to them, it is necessary to establish two other passing points: "birth" and "present." By limiting the behaviors to the five passing points, it is possible to simplify complex migration of artisans, and to extract migrations relating only to reproduction.

A lifepath graph is drawn by plotting places in which an artisan reached the passing points. The author adopts the regional division of Figure 6 on plotting the places. Migration within the same zone is regarded as a "stay." A place plotted at a passing point is not a residential place, but a work place, except at the birth. Although factories are mostly located in residences, artisans who do not become independent often commute to the master's factory. By plotting the working places, the places where apprentices learned their skill became apparent. Because there is a considerable variation among artisans' life histories, this study focuses its discussions only on the places; the age crossing the point and the interval between two passing points are ignored.

2. Classification of artisans

Although all artisans have the "birth" and "present" passing points, other points differ among the artisans. For example, an artisan whose father had no relation to *shikki* does not pass the "inheritance". An artisan who inherited his father's profession does not experience "independence." Therefore, the author classifies artisans into four types, by differences of passing points of lifepaths (Table 4).

The contents of the four types are as follows. Type A (39 samples) includes the artisans who have finished training but have not achieved independence. Type B (147 samples) includes the artisans who achieved independence as surface decoration makers after training. Type C (40 samples) includes the artisans who inherited their fathers' profession. Type D (19 samples) includes the artisans who inherited their fathers' surface decoration making after training under another master. The Type A artisans have only the "entering" between the "birth" and "present" as the passing point. The Type B artisans experienced the "entering" and "independence" between them. The Type C artisans have only the "inheritance" between them. The Type D artisan experienced the "entering" and "inheritance" as well. The four types occupy 97.2 percent of all samples.

Figure 9 shows artisans' lifepaths of each type. They indicate the regions where artisans experienced the passing points. The X-axis indicates the regions defined by Figure 6 according to the distance from the central Wajima, while the Y-axis indicates the time sequence from the birth to the present. Hatched parts represent

Table 4. Classification of artisans, 1991

Definition	Type	Included passing points	Number of artisans
a. Engaging as artisan after apprentice	Type A	Birth, entering, present	39
b. Independent as artisan after apprentice	Type B	Birth, entering, independence, present	147
c. Inheriting father's profession	Type C	Birth, inheritance, present	40
d. Inheriting father's profession after apprentice	Type D	Birth, entering, inheritance, present	19
Impossible to classify			3
Unknown			4
Total			252

Data source: Questionnaire in August, 1991.

Figure 9. Lifepaths of surface decoration artisans, 1991

Regional division follows that in Figure 6.

Data source: Questionnaire in August, 1991.

the passing points.

According to the lifepaths shown in Figure 9-a, their birthplaces are distributed in all four regions, including outside Wajima. However, places of “entering” and present working places are concentrated only in central and suburban Wajima. Nineteen artisans have entered training in central Wajima, and 20 artisans have entered training in suburban Wajima, almost equal numbers. Artisans who moved their work place from one to another after entering are only six. The other 33 artisans are engaged in their work under their masters. The artisans in the Type A are mainly younger, who do not have enough skill and capital for independence.

Now they continue to learn skills after the apprentice period, while they save money for independence.

Similarly, birthplaces of the Type B artisans are distributed in all regions (Figure 9-b). The entering places are distributed in central and suburban Wajima, except for four artisans. The lifepaths of those artisans go through suburban and rural Wajima after inheritance. Between entering and independence, migrations from central and suburban Wajima to suburban and rural Wajima reach 53. Migrations in the inverse direction stay at only 14. Furthermore, between independence and the present, migrations from central and suburban Wajima to

suburban and rural Wajima are dominant. As a result, the lifepaths that go through passing points in suburban and rural Wajima increase as time sequence. In contrast, the lifepaths that go through the points in central Wajima decrease as time passes.

Among 40 Type C artisans, 39 were born in central Wajima (Figure 9-c)²³. Although the artisans in Type B often move, they have few experiences of migration. Artisans who stay in central Wajima without migration reach 30 among 40 artisans. Though artisans who have no move since birth exist in all types, they are particularly numerous in Type C.

Although the artisans in Type D have the same profession of their fathers, they are trained under other masters. There are many artisans who consider making their sons or daughters enter the Wajima *shikki* industry under other masters. The reason is to eliminate favoritism and to make them learn the skills of other masters. The period of separation is only during apprenticeship. This type possesses a similar characteristic to Type C.

Like Type C, 17 of 19 artisans in Type D were born in central Wajima (Figure 9-d). Also, ten artisans have been staying in central Wajima like Type C. The places of entering are only within central and suburban Wajima. After training, they return to their birthplaces to inherit their fathers' profession.

Artisans in Type A or B came from all regions to enter training in central and suburban Wajima. After independence, they spread all over Wajima City again, though concentrating in central Wajima. On the other hand, the artisans in Type C or D were mainly born in central

Wajima. Their migration with entering and inheritance was complete within central and suburban Wajima. The lifepaths of artisans in the Type A or B spread widely and moved constantly. In contrast, the lifepaths of artisans in the other types tend to stay in central Wajima.

3. Migration patterns of artisans

This section extracts migration patterns of artisans based on the analysis of their lifepaths classified by direction of migration. The migrations of artisans consist of three elements: (1) staying: no move in a region, (2) centripetal migration: moves in a direction toward central Wajima, and (3) centrifugal migration: moves away from central Wajima. Though migrations of artisans seem to be complex, they can be represented by the combinations of the three elements. By their combination, the author bundles surface decoration artisans' lifepaths into five clusters of migration (Table 5).

Cluster I includes the artisans who have not moved since their birth. Cluster II includes the artisans who moved toward central Wajima. Cluster III includes artisans who moved away from central Wajima. Cluster IV includes artisans who once moved toward central Wajima, and then moved from the center. Cluster V includes artisans who once moved away from the center, and moved toward the center. The largest cluster of migration is Cluster I, with 101 artisans that occupy 41.2 percent of the total, followed by Cluster II with 57 artisans and Cluster IV with 45. In summary, almost as the same numbers of artisans as the staying type have moved away from central Wajima.

Table 6 shows Type A, B, C, and D artisans by

Table 5. Classification of lifepaths by patterns of migration, 1991

Definition	Cluster	Pattern of migration	Number of lifepaths
a. Staying in the same region since birth	Cluster I	Staying	101
b. Moving toward the center	Cluster II	Centripetal	32
c. Moving away from the center	Cluster III	Centrifugal	57
d. Moving away from the center after centripetal migration	Cluster IV	Centripetal-centrifugal	45
e. Moving toward the center after centrifugal migration	Cluster V	Centrifugal-centripetal	13
Unknown			4
Total			252

Migration within a zone is regarded as staying.
Data source: Questionnaire in August, 1991.

Table 6. Numbers of Type A, B, C, and D artisans by migration category, 1991

Type	Pattern: Cluster I	Cluster II	Cluster III	Cluster IV	Cluster V	Total
Type A	11	16	10	1	1	39
Type B	50	14	33	42	8	147
Type C	30	2	8	0	0	40
Type D	10	0	3	2	4	19
Total	101	32	54	45	13	245

Figure 10 shows lifepaths in bold numbers.

Total number is the number in Table 4, subtracted unknown 7 artisans.

Data source: Questionnaire in August, 1991.

Figure 10. Lifepaths of surface decoration artisans by clusters and types, 1991.

Regional division follows that in Figure 6.

Data source: Questionnaire in August, 1991.

migration cluster. The artisans in Type B have 50 artisans in Cluster I, 42 in Cluster II, and 33 in Cluster IV. The artisans in Type C are 30 in Cluster I. The artisans in Type D occupy more than half in Cluster I. The artisans in Type A reach 16 in Cluster II. The main five groups shown in Table 6 are Cluster I, III, and IV of Type B, Cluster I of Type C, and Cluster IV of Type A. These five groups include 171 artisans, or 69.8 percent of all samples. Therefore, it is possible to explain most migration patterns of surface decoration artisans by examining the lifepaths of the five groups.

Figures 10-a and 10-b demonstrate the migration patterns of Cluster I. The former shows the lifepaths of Type C, while the latter represents those of Type B. Among 80 artisans in this group, 74 are stayers in central Wajima. The 74 artisans include 30 in Type C and 44 artisans in type B. These 74 artisans occupy 30.2 percent of all samples. The 30 stayers in central Wajima occupy 75.0 percent of the 40 artisans of Type C. In contrast, among 147 artisans in the Type B, stayers in central Wajima occupy only 29.9 percent.

The type B artisans with Cluster IV occupy

17.1 percent of all samples (Figure 10-c). Birthplaces of the artisans in this group are distributed outside central Wajima. However, 88.1 percent of artisans 37 people entered training there. Among them, 33 artisans moved to suburban or rural Wajima for independence. Moreover, four artisans who had already been independent moved to stay in suburban Wajima. In other words, centripetal migrations took place when the people became apprentice in central Wajima, while centrifugal migrations from central Wajima occurred when they became independent. These artisans in Cluster IV occupy 93.3 percent of Type B people. Cluster IV with centripetal-centrifugal migration is characterized by Type B artisans.

Figure 10-d shows the lifepaths of artisans in Type B with Cluster III. This group includes 33 people which occupies 13 percent of all artisans. Except for one, all of them were born in central Wajima. Moreover, 23 of them entered training in this region. The other ten entered the training in suburban Wajima. Among the artisans entered the training in central Wajima, 16 artisans moved to suburban and rural Wajima before independence, while seven other artisans moved after independence. The artisans who work in the suburban Wajima are 30. Because the group occupies 66.1 percent in Cluster III of 54 artisans, Cluster III is also characterized by the independent type.

Finally, Figure 10-e shows the lifepaths of artisans in Type A with Cluster II. The group includes 16 artisans, which are 6.5 percent of all artisans. They were all born in the regions outside central Wajima. After entering training in central and suburban Wajima, they were employed as artisans. The artisans in this group will be independent surface decoration makers. In any case, they have a large potential to move to suburban and rural Wajima, like artisans with Cluster IV.

From this analysis, three migration patterns of artisans are identified. The artisans following the first pattern were born in central Wajima and have been staying there. This pattern includes 75.0 percent of the inheritor type and 29.9 percent of the independent type. In case of the inheritors, they do not need to move out of inherited factories and residences. Such arti-

sans are the majority of surface decoration makers. They become stayers in central Wajima. In the case of Type B artisans, they have enough space for residence and factory in central Wajima. They can be independent merely by improving a room for processing²⁴.

The artisans of the second pattern were born outside central Wajima, entered training under surface decoration maker in central Wajima, and became independent mainly in suburban Wajima. This group consists of newcomers, now in their thirties or forties, who were encouraged by the growth of the Wajima *shikki* industry. Moreover, the artisans in Type A with Cluster II have a large potential to transfer to other patterns in the future.

The final group were born in central Wajima, entered training there, and moved to suburban Wajima. Many of the artisans who have this pattern are in Type B. Their lifepaths during birth and entering are similar to those of Type B artisans with Cluster I. Because their homes in central Wajima were small and inadequate, they moved to suburban Wajima when they become independent.

Figure 11 shows cases of lifepaths of the main three migration patterns. Artisans shown in the figure were a master and his apprentices. Thus their paths form a bundle at the Artisan A's firm in the central Wajima. Artisan A is a typical case of the first migration pattern which belongs to Type C with Cluster I. He was born in central Wajima in 1932, and was trained by his father from 1944 to 1950. He had worked at three other firms, and inherited his father's atelier in 1956. Although he moved four times before inheriting, he did not go outside central Wajima.

Artisan B was born in Toyama Prefecture next to Ishikawa. Though his parents had no relation to *shikki*, he learned lacquer craft at high school. He was advised to be an artisan by Artisan C, his elder cousin. He came to Wajima in 1977 to be trained as an apprentice at Artisan A's firm, and became independent in central Wajima in 1984. His first firm was a rented house, while he saved to buy a house. He moved to his own residence in suburban Wajima in 1989. He lives and works at home which is larger and has better conditions than the

○ Birth E Entering A Employed as artisan I Independence
 S Inheritance M Removal after independence
 a Artisan A's firm b, c, and d Birth places
 e, f, and g Artisan A's work place
 h and i Independent places of Artisans B and C
 j and k Present residences of Artisans B and C

Figure 11. Cases of three main migration patterns of artisans, 1991.
 Data source: Questionnaire in August, 1991.

former residence. His migration follows the centripetal-centrifugal pattern and belongs to type B.

Artisan C was born and trained in central Wajima. He grew up with no relation to *shikki*. After finishing his training and sequential work, he rented a house in central Wajima and started life as an artisan. A lot of rented houses existing in central Wajima are used by younger artisans because of cheap rent and adequate size. After that, he bought and moved to a new residence located in the same community as Artisan B, because the rented house had become too small to work and live for him and

his family. Because his migration makes the centrifugal pattern, and he belongs to Type B, he is a typical case of the third pattern.

In the reproduction of skilled artisans, the three patterns are part of the factors of expansion of the *shikki* firms. The distribution of the *shikki* firms expanded as centripetal-centrifugal and centrifugal migration patterns. Centripetal-centrifugal migration, shown by Cluster IV, were followed by Type B artisans who were born in suburban and rural Wajima. The participants of centrifugal migration, shown by Cluster III, are Type B artisans born in central Wajima. At the same time, the artisans in Type

C have been staying in central Wajima, maintaining the spatial agglomeration of the *shikki* firms.

V. CONCLUSION

The purpose of this study is to clarify the migration patterns of labor force caused by vocational education in a growing traditional industry region which maintains traditional production techniques. To achieve this purpose, the author analyzed the reproduction of skilled artisans under apprenticeship, as a vocational education system in Wajima *shikki* industry. The results of the analyses are as follows.

Artisans who produce *shikki* have learned their skills under apprenticeship in each firm. As a result of the production increases, it was necessary for the Wajima *shikki* industry to train many unskilled workers who had had no previous relation to *shikki*. Originally, the apprenticeship system repeated the simple reproduction of artisans passing down skills. The acceptance of the unskilled workers brought about expanded reproduction of artisans and a qualitative change in apprenticeship.

The qualitative change in apprenticeship is reflected in migration patterns of artisans and in their reproduction process. Three migration patterns are extracted. (1) Inheritors who should inherit skills have stayed in central Wajima. (2) Many of Type B artisans have experienced centripetal-centrifugal migration. They moved to central Wajima to learn skills, and then returned to suburban or rural Wajima. They were born outside central Wajima, and their parents had no relationship to the *shikki* industry. (3) Type B artisans born in central Wajima have experienced centrifugal migration. The Type B artisans, who have either centripetal-centrifugal or centrifugal pattern, expanded the distribution of the *shikki* firms outward. The inheritors, who stayed in central Wajima, maintained spatial agglomeration of *shikki* firms in this region.

While the apprenticeship changed qualitatively to cope with production increases, it could strengthen the reproduction function by expansion of the labor supplying area. The author expects that, in the varnishing part as

well, the apprenticeship made the reproduction of artisans smooth. The number of varnishing artisans who could be *kaiuketori* subcontractors, grew in the process of artisans' reproduction. This change supported mass production by hand without introducing modern facilities in the varnishing part.

Qualitative changes of apprenticeship strengthened the reproduction of artisans. While the original function of apprenticeship as the inheritance of skill has weakened drastically, the new system has expanded the labor supplying area by accepting unskilled workers who had no relation to *shikki*. The three migration patterns of artisans show diversification and expansion of labor supplying area in Wajima *shikki* industry.

The apprenticeship served as an effective vocational education system to train skilled artisans in Wajima *shikki* industry. The author expects that other vocational education systems are adopted in other traditional Japanese industries. It is necessary to classify the vocational education systems and to examine the temporal-spatial patterns in many traditional industry regions. This paper is the first step toward such research.

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Notes

- 1) For example, Ueno (1973, 1977, 1978, 1984), Kusakabe (1984), Tsujimoto (1959), and Saito (1967).
- 2) For example, Yamaguchi (1967, 1969, 1970), Goda (1971), and Takatsu (1969).
- 3) The other prerequisites of the designation of traditional craft industries are as follows: an industry that produces daily goods; the industry that includes handicraft processes mainly; the industry that uses traditional materials; and one

which makes spatial agglomeration (Association for the Promotion of Traditional Japanese Crafts, 1993).

- 4) The Wajima *nuri* is the name of a traditional craft industry, designated by the Ministry of International Trade and Industry. Items which do not satisfy the prerequisites of traditional craft (e.g. using chemical paint, plastic materials, etc.) are also produced in Wajima. Because this study deals not only with the traditional craft, but also with others, the author adopted the term Wajima *shikki*.
- 5) The number of employees in the *shikki* industry is derived from statistics by the Cooperative of Traders and Manufacturers in Wajima *Shikki* in 1989.
- 6) The joinery is one of process methods of wood body made from *ate* (*Hiba Arborvitae*, *Thujaopsis dolabrata Honda*). It forms straightly, and is good for nest of boxes, shelf, and so on. The hollowware has curved form using *honoki* (*Silverleaf magnolia*, *Magnolia obovata*). It is good for foot of table, or flower stand. The rounded board body is good for tray or lunch box, rounding thin and narrow *ate* board. The turnery processes *keyaki* (Japanese selkova, *Zelkova serrata*) for bowl and dish by turner.
- 7) The ground diatomite powder is a powder made by burning diatomite mined in Kominyama in Kawai-machi. It consists of glass, including small holes. Mixture with raw lacquer makes hard priming layers (Association of Japanese Lacquer craft, 1987).
- 8) Mechanism in drying lacquer is oxidation of urushiol as the principal ingredient by an enzyme named lacase. The lacase activates in 75 to 85 percent of humidity and 25 degree of temperature. Therefore, it dries faster in summer, and more slowly in winter (Association of Japanese Lacquer craft, 1987).
- 9) The *makie* is one of the techniques in surface decoration in which golden powder is sprinkled on the design drawn by lacquer. The *chinkin* is a technique of carving on the surface with a chisel to inject lacquer and to inlay gold foil into the hollow. The *roiro* is a technique of polishing with charcoal and titan powder, or sprinkling fragments of abalone.
- 10) It regards apprenticeship as an efficient skill education method. Many enterprises adopt OJT (on the job training), which originated in apprenticeship.
- 11) The period of apprentice was 13 years in Edo era and seven years before the second World War. Apprentices had to work a year under their master after the training period (Wakabayashi, 1952).
- 12) Also in Narakawa (Nagano Prefecture), there are many parties of fellow disciples (Ito and Udagawa, 1985).
- 13) Wajima *shikki* industry increased production by restructuring of the organization in production and distribution, which included diversification of sales methods and adoption of effective production ordering to *kaiuketori* subcontractors. Therefore, Wajima *shikki* industry developed through maintaining traditional production techniques (Suyama, 1992).
- 14) Because a heavy involvement of sales made it difficult for *nushiya*'s masters to teach final coating, Wajima *Shikki* Cooperative Vocational School was established. It teaches final coating to varnishing artisans once a week.
- 15) The Training Institute of Lacquer Craft Technique consists of four courses, wood body making, varnishing, *makie*, and *chinkin*. It teaches high technique and skills in lacquer craft to artisans who have finished their apprenticeship. Studying in the institute is a starting point not only for artisans but also for lacquer craft artists. Its graduates often win prizes in major exhibitions.
- 16) Course of Interior in Wajima Vocational High School aims to develop successors in the *shikki* industry. Students in the school learn basic *shikki* production technique within three years. Until 1990, about 350 graduates have engaged in the Wajima *shikki* industry.
- 17) The artisans who work in the *nushiya*s are eight. Their attributes are so similar to the others that the author counts them in samples of *nushiya*.
- 18) The *Makie*, *Chinkin* and, *Roiro* Cooperatives impose the qualification that members need to have finished four years of training.
- 19) Some surface decoration artisans were born in regions far from Wajima, such as Okinawa, Aomori, Tokyo, and Kagawa.
- 20) Suburban Wajima includes 2 areas which have less than 10 artisans. Although they are supposed to be categorized as rural Wajima, they are here defined as suburban Wajima, because they adjoin central and suburban Wajima, and because both residents and natives are only four.
- 21) About 30 percent of the samples have had experience engaged in professions outside the *shikki* industry.
- 22) When inheritors are trained under their fathers they often do not hold distinctive ceremony. Therefore the author decided the time of "inheritance", as when they started training.
- 23) The one artisan born outside Wajima moved to the Former Wajima Town as an adopted child, when he was an infant. Therefore, substantially all artisans in the type are natives of central Wajima.
- 24) In surface decoration parts, it is enough to work about 10 square meters.

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在来工業における労働力再生産の時空間的パターン

—石川県輪島市における漆器業の事例—

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本研究の目的は、在来工業の企業内における職業教育が、熟練労働力の養成を通じてもたらす、労働力の地域的移動パターンを明らかにすることである。

在来工業地域に関する研究は、従来新しい生産技術の導入を契機とした地域の変化を主な研究対象としてきた。しかし在来工業地域の過半数は現在でも伝統的生産技術に依存している。本研究では在来技術への依存度が高い輪島漆器業を事例とした。

輪島漆器業においては、現在でも徒弟制による熟練労働力の再生産が行われている。徒弟制は輪島漆器業の企業内技能教育制度である。本来の徒弟制は、漆器関連事業所の子弟が技能を「相続」することを第1の機能とし、熟練技能者の単純再生産に終始していた。しかし、1960年代後半における輪島漆器の生産増加に伴い、漆器業に無関係な家庭に育った子弟の新規参入が増加した。その結果、徒弟制の機能は熟練技能者の拡大再生産に変質した。

加飾職人に対するアンケートをライフパスの概念を用いて時空間的に分析した結果、徒弟制による熟練技能者

の養成過程における職人の移動パターンが3つ抽出された。第1は旧輪島町内で出生した家業継承者による「滞留」型である。このパターンは変質以前の徒弟制の機能である、技能の「相続」に伴うもので、旧輪島町における漆器関連事業所の集積を継続させている。

第2・第3の移動パターンは「求心—離心」および「離心」型である。このうち、第2のパターンは周辺・外縁地域、第3のパターンは旧輪島町で出生した新規参入者がたどる軌跡である。徒弟制による技能訓練を受けるためには漆器関連事業所が集積する旧輪島町に移動する必要がある。弟子入り時に旧輪島町で生まれた職人そのまま滞留するが、それ以外の者は旧輪島町方向に求心移動を行う。技能を修得した後、彼らは独立した職人となるが、自ら作業場となる場所を確保する必要がある。良好な作業・生活環境を有する土地を確保するために、彼らは周辺・外縁地域に離心的に移動する。これら2つの移動パターンは、漆器関連事業所の分布拡大をもたらした。

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