

# The Influences that The Change of Wooden Craft Industry's Technique Brings to Wooden Craft Industry in Lu-Gang, Taiwan

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**Abstract:** Because government and scholarships' confusion for the position and value of traditional art, people regard "Traditional Craft" as one kind of implements of "tradition", "culture" and "beauty". It usually expresses that they prize the coverage of beauty of art creations and ignore that traditional craft has been the existence meaning of industry figuration in history. As the goal of discussion turns to the value and possibility of continuity, they will find that it can not give a complete explanation and analysis to preceding question by ignoring the distinctive region factor and industrial social structure factor in history evolution.

Therefore, in this paper, the explanation and analysis of the wooden craft technique's development history is the main research subject. And in the explanation of case is focus on the transition for related technique of wooden craft industry in Lu-gang, Taiwan. The primary results of the research are:

- 1.The explanation about the characteristics of wooden craft industry's technique mechanization process.
- 2.The influences that wooden craft industry's technique mechanization brings to wooden craft industry (pursue the decrease of time cost — replacement of work of craftspeople —division of craftspeople —subassembly and standardization of craftspeople).

**Key words:** *History, Wooden craft industry, Technique, Lu-Gang, Taiwan*

## 1.Introduction

In the research of Taiwan design history, the amount of craft researches are increasing in recent years, it expresses that people set value on the territory of craft. However, it is still a very long way to make the research territory which is not prized by the design circles in Taiwan grow and strong.

Trace to the modern design works' source, we could find influences from many kinds of craft items of "traditional craft" (it primly means the craft manufactured by traditional technology). Therefore, as tracking the history, these relational craft history researches usually become the reference evidences to understanding its change of causes and effects.

Entering the 21<sup>st</sup> century, it is the time when "traditional craft" in Taiwan as one kind of industry style is generally toward disappearance, some people hope to continue the "traditional craft" by regarding it as one kind of "culture industry" from the opinion of remaining advanced traditional culture.

The influence factors that appear in the process of woodcraft industry's variation usually happened around

people (craftsmen, organizations, industry and society), things (materials, products) and events (technique, impartation and inheritance, requirement and circulation). The author has announced dissertations about the organization, materials, products and the industry history of woodcraft industry; therefore it focuses on the explanation of the woodcraft technique's development history to be the main research item at this time. The case explanation is based on the relative technique woodcraft industry's variation in Lu-Gang, Taiwan.

Lu-Gang is the second grew and developed old town in Taiwan development history with more than three hundred developed years (It is only next to Tainan, its position in figure 1). Until now, there are many traditional craft industries retained in the local place where reserved more completely (many traditional craft industry were gone in Tainan), and wooden craft industry is one of the main core craft industry in Lu-Gang. It should be Lu-Gang in middle Taiwan and the Da-Shi in north Taiwan where are the famous places still exist craftspeople and factories and have more than one hundred years of development history in Taiwan. However, comparing to the amount of owing products types, Lu-Gung is the best.

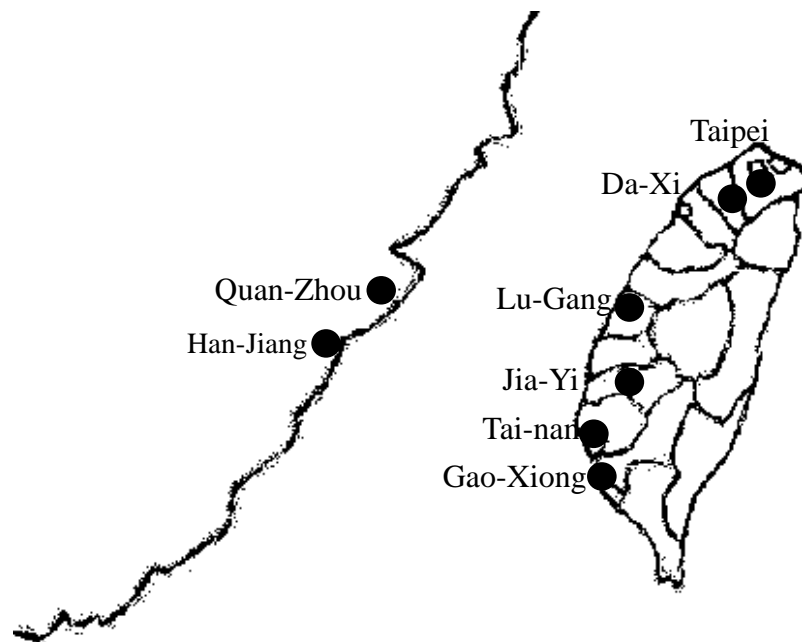


Fig.1 The locality between each important city in Taiwan and Mainland

The method of research is based on the interview of the craftspeople of wooden craft industry and the person in charge of the factory in Lu-Gang, and then combines with the analysis about documents and data of the society environment background.

The main purposes of research are (1) to explain the technique mechanization process and the characteristics of wooden craft industry in Lu-Gang, Taiwan (during 100 years in recent time) (conclusion 3.1), and (2) to discuss the influences that wooden craft's related technique variation brings to wooden craft industry (time cost, replacement of work, separation of role and technique) (conclusion 3.2).

The importance of this research not only creates more abundant contents in Taiwan life culture history and material culture history, but also contains the leading function of establishing the research on Taiwan craft industry history. In the history of craft technique through a lot of important issues in sociology research such as craft history, technique history, influences of mechanization; therefore it not only explores the technology questions in traditional craft industry, but also makes the development process and characteristics of traditional craft technique to be a direction for improve cases research in the research territory of technique history. This essay also support

those craft industry areas such as Lu-Gung and Taiwan a basis to think about the develop tactics in the future.

## 2. The transition process of wooden craft technology

### 2.1. Qing dynasty and Japan dynasty

It is about 1960 ~ 70s that Taiwan wooden craft industry really entered the mechanization process. Before, all of wooden craft products were made by simple carpenter tools such as saw, chisel, plane (Compare to the word “woodworking equipment” in the following paragraphs, carpenter tools means woodworking manual tools in preceding paragraphs.).

In the traditional “system of master and apprentice”, a new apprentice has to begin with manufacturing the woodworking manual tools which are used by himself. According to the word of craftspeople, there will be some unsuited situation, if one doesn’t use the tools that he used to, and it is incongruity; if he hopes the carpenter manual tools that made by himself could be used for several ten years, there is no other method besides adjusting by himself; and it is one of basic abilities to wooden craftspeople that creating and improving new tools for make a new product.

Traditional woodworking manual tools are as figure 2 (These are the tools existing in nowadays in following pictures), such as Wen-Gong rule (for common use), Ting-Lan rule (for ancestor shrine), plane, mallet, big saw...etc. Traditional woodworking manual tools, except plane and Wen-Gong rule, are still used before entering mechanization period.

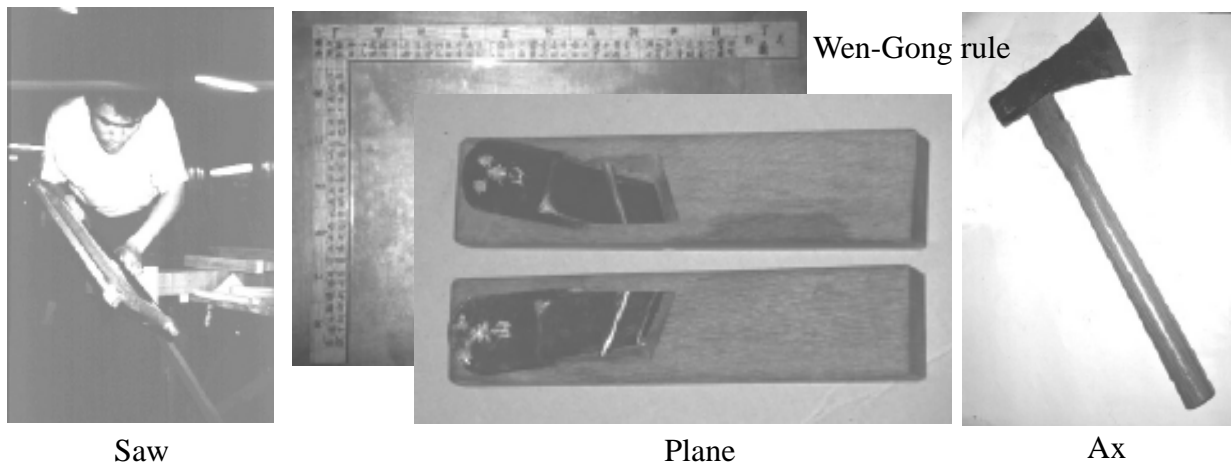


Fig.2 The basic carpenters' handiwork tools using in wooden craft industry

Although these traditional handicraft technologies have lasted about two, three hundred years in Taiwan, woodworking equipments generally replaced the segmental function of traditional wooden craft handicraft tools from the later period of Japan dynasty.

Taiwan started to develop power industry in 1930s (Japan Showa dynasty), and then according to the policy of Japan doge palace, it was very fast to develop the process of industrialization to make Taiwan be the base to supplement the war resources. At that time, the main items of industrialization were engineering industry and metal industry [1]. Basically, there were three territories. The first, the industry were related to the military supplies directly, for example, machinery industry, electric industry and iron industry. The second was light industry of military supplies, such as fiber industry, pharmaceuticals industry, fishery and livestock processing industry and tanning industry...etc. Third was general light industry with the goal of autarky in Taiwan, such as papermaking

industry, brewing, lumber and wooden products industry...and so on. Therefore wood products industry was be one of the main items at that time, and also promote its technology [2].

In the period, addition to the technology of wood products industry generally develops toward mechanization for military supplies, the technology of wooden craft appliance manufacture also advanced. There were two seminars were held in Taipei and Chiayi. The place of the seminar in Taipei used stand-form machine to precede practical training, and the place of the seminar in Chiayi used handiwork of seat-form to precede practical training. The subjects of seminar were science, generality of craft, design conception, the conspectus of machine using method, coating [3].

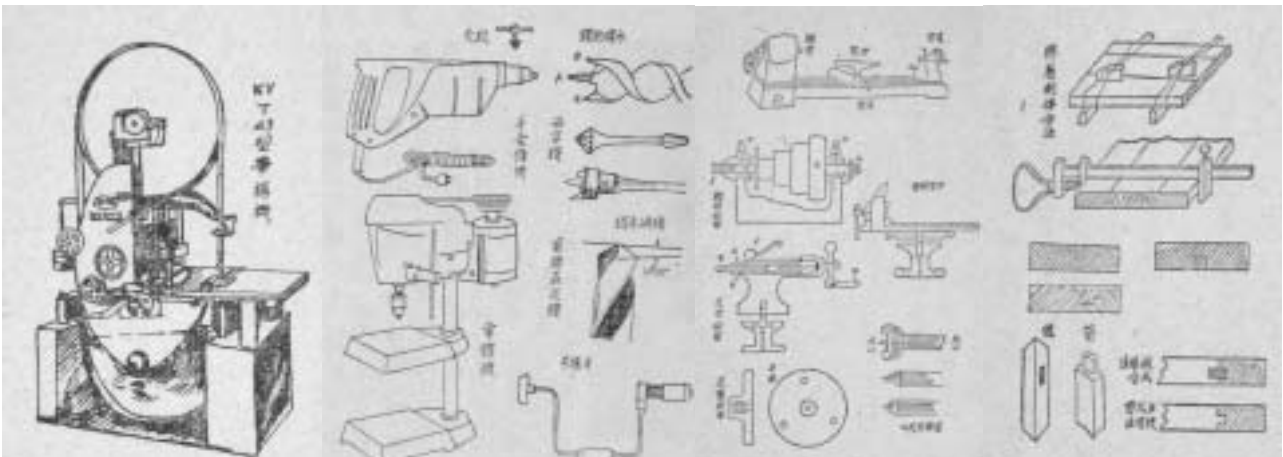
The main contents of seminar are focus on the new wooden craft products' the design conception, method and the using of materials, machine and coating. Because inducting the manufacture of Western style furniture, about the method of furniture design, the kind of wood, operation and connection are the main points of teaching; at the same time, they introduced about the knowledge of carpentry machines such as the kind of carpentry machines:(1)Saw (band saw, circular saw), (2)Planer (jointer, plane), (3)Drill press (drilling, boring), (4)Lathe, sander, mortise, and recorded architecture, machines' disposition [4].

However, the benefit of wooden crafts industry mechanization that preceding seminars brought to Taiwan, it was just the effect of initiation. According to the real situation at the time, besides schools and jail, the main wooden craft factories practically did not start to use machine requirement in Taiwan; however, it generally began the first step to use woodworking equipment in consideration of the economic cost made by time and labor force. Although the traditional wooden craft industry were still manufactured by handiwork, with the induction of western style furniture and the development of related technology, the production of furniture starts the stage of adopting produce by machines. About 1932 (Showa 7), in a factory, which was operated by a Japanese, they import simple woodworking equipments such as circular saw, jointer, punch...etc, and the factory only manufacture simple wooden craft products (door, window) (Note 1). Big factories could buy machines in the period (these factories are mostly gathered in metropolitan area, but many small family factories which were the main stream in Lu-Gang still use manual tools (for example, ax, saw, plane, awl and hammer). In factories that manufacture traditional wooden craft products, the using of woodworking equipments were still in the stage of enlightenment.

## **2.2. After World War II to 1970s**

From 1955, by the popularization of carrying automatic tools in Japan, it brought huge change on the tools of wooden buildings [5]. In 1956, there were homemade woodworking equipment factories named "Sheng-Feng" and "Guang-Rong" that was the first one in Taiwan in Feng-Yuan, the middle Taiwan [6]. Before the factory, all of the woodworking equipments were importation in Taiwan and the amount is also not huge number. At the time, there were 7 ~ 8 workers, the month yield were 2 ~ 3 machines, and the types of products were single functional woodworking equipments such as jointer, automatic plane...etc.

From the beginning of 1962, China Crafts Magazine started to periodically introduce the content about products, market and technology of wooden craft, furniture, crave. It is the main content about the articles of wooden furniture and relative woodworking equipments. As Figure 3, there are many illustrations of craft machines printed in the magazine; even many parts of woodworking equipments are imported from Japan [7].



**Fig.3 The introduction of woodworking equipments written in the magazine in 1960s (Authorship: China Crafts, 1962-1963)**

In 1960s, the exportation of wooden furniture was more and more prosperous and it also became the motive of inducing woodworking equipments to wooden craft factory; the result prompted the growth of Taiwan home-made woodworking equipment's total sales, therefore setting up a lot of woodworking equipment factories in short-term. In the period, the amount of woodworking equipment manufactured in Feng-Yuan where was called the vanguard place of woodworking equipments was 90% [6, p.175]. It had developed to 16 factories in 1971, woodworking equipments also started to import to Indonesia, Middle-South America... etc (Note 2). The sale proportion of woodworking equipments in 70s, the domestic sales amount was about 4/5 and exportation the sales amount was about 1/5 [8].

In the beginning of 1970s, it was base on single functional woodworking equipments, which were made in Taiwan, such as circular saw, band saw, jointer, plane, drill press. At the time, the advantages of woodworking equipments in advertisement were (1) promote the efficiency of manufacture, (2) manufacture in a great quantity, (3) raise the precision, (4) decrease the wastage of materials, (5) decrease the expenditure of labors' salary, (6) ensure the quality of products, (7) decrease cost of entirety total manufacture...etc [7, p.26-27].

From the middle stage of 1960s, it generally began to develop the mechanization of produce and manufacture technology. According to the field investigation, although the amount of using circular saw, jointer and plane was less, people had started to use them.

Until the beginning of 1970s, the traditional furniture industry and wooden products industry in Lu-Gang were not influenced by mechanization, and continued the process of handiwork manufacture. However, Shoji (Paper sliding door) and Kumiko Ranma (transom window) industry that just started to export to Japan at that time had started use and import the special machine from Japan (Figure 4) (Note 3).



**Fig.4 Warihiki Machine**

### 2.3. From 1970s

There were 150 woodworking equipment factories in Taiwan in 1981, and they were almost family style factories [6, p.175]. By Taiwan exportation wooden furniture industry start to grow in 1970s, woodworking equipments also started to use in big amount and popularization. In the local place, Lu-Gang, from the end of 1970s to the beginning of 1980s, there were many wooden furniture industries (modern furniture) appear. In 1970s, modern furniture factory only made wooden furniture by using single functional woodworking equipment, in 1980s, they started to use the automation woodworking equipment; after 1990s, they were almost use automation machines to produce wholly (Note 4).

It is the growth period of woodworking equipment in Taiwan from 1982 to 1991. In 1970s, after the induction of single woodworking equipment exploit the market of exporting furniture industry, the exporting amount also increases year by year. In 1990s, the exporting amount of woodworking equipment firstly transcend America and Japan, and second to German and Italy, Taiwan become the third exportation country of woodworking equipment in the world [9].

The growth proportion of using woodworking equipment that began from the middle of 1970s generally brings effects to Lu-Gang. For example, the appearance of Carving Machine influenced on the Buddhist statue carving in Lu-Gang. The Buddhist statue carving in Lu-Gang started in the end of 1970s and grew rapidly by the opportunity of economic growth. Buddhist statue carving industries that originally completely manufactured by hand became mechanization for gaining more profits. However, because people could not distinguish the different between handiwork Buddhist statues and machine-made Buddhist statues, the trend of buying Buddhist statue became based on the price, it was the reason that Buddhist statue carving craftspeople' income decreased by the reduce of market, life became more embarrassed, and then they had to switch to another work or transfer the direction of creative carving (Note 5).

In addition to the influence on carving industry, the process of mechanization also brings important influences on carpenter furniture in 1970s. Compare with the procession of manual tools before, there were several procedures move to mechanization in the produce method in this period. About the modern wooden furniture industry which were developed in 1970 inducted single functional woodworking equipment in the initial stage; then it moved to mechanization with wooden craft industry and traditional furniture industry in closely period, and made woodworking equipment be one of the original handiwork industry's procedure. Although the part of mechanization engineering was different according to the differences of products, basically it was more mechanized on the part of engineering that were products' modification, woodcutting, wooden Mortise production, and circle and polygon production. Therefore most carpenter factories had woodworking equipment, because in the engineering of production, woodworking equipments are the indispensable tools (Figure 5).



**Fig.5 Woodworking equipments used in the carpentry factory in Lu-Gang (1980s and 1990)**

According to the interviews with craftspeople and proprietors, we get four points as follows: (1) Woodworking equipments are regarded as indispensable tools in the procedure of wooden craft production, especially on the way of raising efficiency (it can save about 1/4 of manufacture time). (2) The proprietors identify that because economic growth will provoke the rise of wages cost, induct machines for inhibiting the cost. However, they also identify that induct machines will deprive the work of craftspeople, and the successors of wooden craft industry decrease. (3) Only above 80 years old craftspeople are the center of handiwork technology in Lu-Gang nowadays. The craftspeople as 40 ~ 80 years old can do both technology, but they primly use woodworking equipments in the manufacture procedure, therefore the technology of handiwork produce is generally face the crisis of decline<sup>1</sup>; even the craftspeople as bellow 40 years old, they may learn the produce process which is based on woodworking equipments at the beginning stage of learning. (4) Modern furniture industry had used woodworking equipments since 1970, and inducted the equipment of automatic woodworking equipment in 1980. The workers (although the proprietor of this industry could be called master, they are different to traditional masters whose work are based on handiwork manufacture technology, they can not be lump together) had been used woodworking equipments as the beginning of learning work, and naturally in the process of mechanization.

### **3. Conclusion :The process and analysis of technology transition**

#### **3.1.The interpretation of technology transition process and the characteristics of wooden craft industry in Lu-Gang, Taiwan**

The woodworking equipment in Taiwan developed late about 10~20 years than Japan. Taiwan woodworking equipments are few and almost imported from Japan in Japan Meiji period (1895-1911). After the war, although the development of woodworking equipment appeared standstill situation, it started to develop rapidly by the opportunity that trend of importation furniture appearance. From the speed that the using of single functional woodworking equipment in middle of 1970s change to the using of automation machine in the middle of 1980s, the development of industry is really an exceptionally grand occasion.

Although they had hold the seminars about woodworking equipments in Meiji period, the development of domestic woodworking equipment in Taiwan expand by satisfying the requirement of wooden craft industry mar-

ket after the war and proceeding research and imitate overseas woodworking equipments. And then it makes Taiwan become the third woodworking equipment exportation country in the world as entering 1990s that abundance developing woodworking equipments for satisfying the requirement of domestic and overseas wooden craft industry market.

Modern furniture industry that started from the middle of 1970s uses single woodworking equipment; after 1980s, following the using of automatic machines, the produce methods are also become the form of automatic production line and mass production; and it also makes Lu-Gang become a famous produce place of modern furniture.

Traditional wooden craft furniture industry start to manufacture by single woodworking equipment on the manufacture of furniture's parts following the trend of mechanization from the middle of 1970s, therefore it is the final period that craftspeople with handiwork technology exists, there are almost no craftspeople under 40 years old with whole handiwork technology exist in nowadays.

Besides, after 1970s, the appearance of carving machine results of the decline of Buddhist statue carving industry. It is one of the influences that the amount of produce type brings to traditional industry.

### **3.2.The discussion and analysis of the mechanization transition process**

This paragraph is based on the interview with craftspeople and carpenters and the observation in local place to analyze the situation in Lu-gang, Taiwan that involved by the process of the wooden craft industry from handiwork manufacture change to mechanization.

(1) The appearance of woodworking equipment bring some advantage such as saving, decreasing the cost of time and increasing accuracy, it is the most important reason that modern wooden craft industry easily accepts woodworking equipments. In order to pursue the speed and efficient, it cannot continued exist without wood-working equipments (except sculpture that is not influenced). Therefore many kinds of wooden craft industry factory will induct some basic equipment of woodworking equipment such as circular saw, jointer, drill press, and sander.

(2) The machine-induction also brings influences to the operating style of wooden craft industry. For example, it is not necessary to hire many craftspeople by laborsaving that brings about unemployed rate of industry and rise the difficulty of maintain manpower; the advance of mechanization makes the decreasing of time cost, rise the yield and then bring the situation of produce excess, at the last, factories sink into the vicious circle of price competition. And then more and more works replace to machines and less and less the craftspeople and workers have. This is the scene we often see in the wooden craft industry in Lu-Gang nowadays.

(3) The influences on mechanization and mass production almost come from the area outside Lu-Gang, for example, machine manufacture technology. New products style those are almost inducted for catering to the growth of exportation wooden craft products' trend, which began in 1970s. Besides, the maturity of machine technology also brings the division of labor of wooden craft industry. In the modern furniture industry, it forms the situation that machine manufacture and labors are only responsible for work their own part by the product line. And it also results to craftspeople as machines, become part and component and standardization. Thus there are no craftspeople and workers who have complete handiwork manufacture technology and below 40 years old in Lu-Gang today; and products that manufactured by craftspeople are only parts and components, not a whole set products (especially modern furniture industry).

## Notes

- (Note 1) According to the interview of Wang Han-Song (Carpenter) (Date: 1998.8.14).
- (Note 2) According to the interview of Zhang Xue-Fang (Owner of [Sheng-Feng] factory) (Date: 1999.4.9).
- (Note 3) According to the interview of Chen Huang-Hui (Carpenter) (Date: 1998.9.2).
- (Note 4) According to the interview of Jiang Yan-Deng (Owner of furniture factory) (Date: 1998.8.28) and Hou Jin-Cheng (Owner of furniture factory)(Date: 1998.8.29).
- (Note 5) According to the interview of Shi Zhi-Hui (Buddhist Sculpture craver) (Date: 1998.10.21).

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