ORIGINAL ARTICLE

Research on Jacket Patterns and Specifications of Ready-to-wear for High-end in Italy and Japan

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Abstract: We compared the production processes of ready-to-wear for high-end in Italy and Japan. We specifically took into account the works of modelists from these countries to understand how their differences influenced the resulting characteristics of garments. We report details of each production stage by predicting the jacket silhouette from body patterns and investigating the characteristics of sleeve patterns. We also investigated the specification sheet for keeping tape and interlining. We found that the concept for producing a jacket differed depending on the country, even for patterns. The predicted silhouette of bodies made in Japan was more planar shapes and linear lines in sleeve, shoulder and waist. On the other hand, the predicted silhouette of bodies made in Italy was loose fitting and three-dimensional. We also showed that interlinings and keeping tapes were used to make more three-dimensional-appearing bodies in Italy. This depended on the discretion of the modelist in Italy.
Keywords: *couture maison, modelist, production process, Japan, Italy, tailored jacket, pattern, specification sheet*

1. INTRODUCTION

Previous studies [1, 2] have investigated the design and production process of expensive and fashionable clothes in *couture maison* (*maison de couture*). The design process in *couture maison* is specialized into two parts, *stylisme* and *modelisme*. *Stylisme* is connected to the design and *modelisme* is connected to the production of garments, such as pattern making and the making of sewing specifications. The whole process is controlled by a creative director in charge of the design and its final specifications. The creative director is also responsible for the sales of a season. In the system of *couture maison*, a final garment is manufactured by the atelier for the *modelisme* part.

However, the final garment of *nouvelle couture* (high-class ready-made clothes) is manufactured by a mass production factory which is a supplier independent from the *couture maison*. An atelier handles the design specification and production of a sample for an exhibition or runway show. On the other hand, a trial product for mass-production is made by a mass-production factory. After the creative director confirms and checks the trial product and production processes and orders mass production to the factory, the factory starts production.

A modelist (a pattern maker) plays a main role in the atelier. Even though some think a modelist is superior to a designer, this might not be true. This is because if there is a difference of opinion with a modelist, a creative director makes the final decision. Also, even though it is said that the designer only draws the illustration, and writes some notes for the design, it is the creative director that strongly influences a customer's decision to purchase.

Modelists only help to make the physical form (garments) of the illustrations and notes. Even though a modelist's work is an important part in the production process, their position is still supportive and not well-defined. Their work has not been demonstrated in studies on clothing construction. Nonetheless, a modelist's work is important for the *kansei* and end result of the final garment [2-4]. However, specifications for the production processes for high-class clothes are still unclear.

Kakuta et al. [5] investigated the properties of textile for high class clothes. They showed *Kansei* affected to the textile manufacturing process and also the final products. However, such studies on clothes and on the process by engineering point of view are still not found.

Apparel making is still depending on a culture of empirical trials and practical experience. We should understand the clothing design as engineering view point. For the first step, we performed the present study.

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Italian apparel was evaluated as high class clothes all over the world [6]. The production process takes advantage of high techniques [7]. Famous luxury brands also show them [1, 2]. To investigate the Italian process will help to understand the clothing design as engineering view point. However, there is no study to investigate through the process from design to manufacture by controlled conditions. In this study, we investigated differences in Japanese and Italian production processes for *nouvelle couture*. Specifically, we designed and produced a tailored jacket for women in Japan and Italy. We did this by only taking into account Italian production processes. We report the details of each stage of the production process.

A garment is affected by pattern, textile and sawing. Even though the pattern is made to show beautiful appearance, the sewn garment can show different one by the sawing and ironing process. Thus, we investigated those two parts, pattern and sewn garment separately. This article is the first part of the study mainly describes differences of pattern. We compared jacket patterns made in Japan with ones made in Italy by predicting a silhouette of a jacket from the patterns. We also took into account the Italian design specification sheet. The ironing treatment and usages of interlining and tape also are considered. The second paper will describe the comparison of actual produced jackets made in Japan and Italy.

2. EXPERIMENTAL DESIGN

2.1 Producing a tailored jacket in Japan and Italy

In this study, two jackets were produced by different experimental process. Both jackets were designed by a Japanese designer. The design was produced in Japan and Italy. Table 1 shows the condition of designing and producing for jacket samples.

A Japanese designer who had been working as a designer of ladies garments was selected as a creative director in charge of an Italian *maison*. This designer established the concept of the garment. Figure 1 shows the
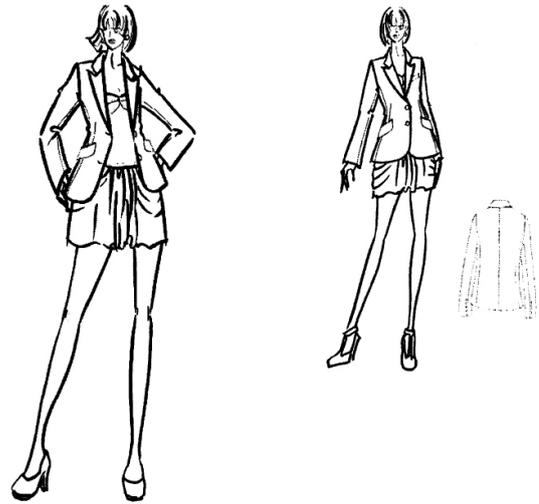

Figure 1: Illustration of designed jacket [2].

illustration the designer drew for the jacket design.

Modelists and production factories in Japan and Italy were selected, to produce the designed jackets. The modelist in Italy had accepted orders from the Italian *maison*. The modelist in Japan was an expert pattern maker (called a "patterner" in Japanese) who had 20 years career in the industry and had experience with sample sewing. The two modelists produced trial jacket samples. After inspecting the jackets and their specifications, they made mass production samples in production factories in Japan and Italy.

The steps of the production process were:

1. The creative director designed a jacket. The illustration and notes on the design was prepared.
2. Trial products (J and I Trial samples) of the jacket were produced by both modelists in Japan and Italy.
3. Then the inspectors (the creative director and the modelist in Japan) inspected the trial products. According to results of the inspection, patterns made in Japan were revised. Patterns for parts such as the silhouette, armhole, and sleeve were modified.
4. The patterns were converted into a CAD system format. The converting condition was for mass

Table 1: Design and production conditions for jacket samples

Jacket / Task part	J Trial sample	I Trial sample	I Trial sample 2	J Mass production sample
Designer	A(Japanese)			
Material	Sheeting	Wool-1	Thin nonwoven	Wool-2
Modelist	Japanese working in Osaka, Japan	Japanese working in Milan, Italy	Japanese working in Milan, Italy	Japanese working in Osaka, Japan
Production factory	Production factory in Osaka, Japan	Production factory in Milan, Italy	Production factory in Osaka, Japan	Production factory in Osaka, Japan

production of 100 pieces in Japan. The converted patterns became the final patterns.

5. The modelist asked a Japanese sewing factory for a mass production sample (J Mass production sample).

6. The both final patterns were compared and an Italian specification was investigated.

7. The modelist in Japan produced a trial sample of Italian pattern with sheeting (I Trial sample 2) to compare both patterns.

This process followed an Italian garment production process. The modelist in Japan understood the Italian system and tried to follow it.

2.2 Producing a tailored jacket in Japan and Italy

Modelists in Japan use patterns to order jackets as samples before mass production. Clothing specialists review the provided design by answering their own questions about silhouette, body, and sleeve characteristics. For the present we used these facts.

The questions for body pattern regard:

a) the percentage of bust, arm, and back width in the chest circumference of the body,

b) the upper and lower body part from the waist line,

c) characteristics of the front body,

d) overall comfort,

e) cover to body,

f) reinforced with interlining,

g) selection of sewing specifications,

h) iron treatment.

The questions for sleeve pattern regard:

i) sleeve width,

j) setting the armscye depth,

k) iron treatment,

l) overall impression.

We performed this investigation to find out differences between the works of modelists from Japan and Italy. Thus, we mainly investigated the characteristics and silhouette of jacket patterns made in Italy. We looked at the difference between samples made from both Japanese and Italian patterns. We investigated steps of the production processes considering the following points:

Point 1. Comparing the produced trial jackets (J Mass production sample and I Trial sample).

Point 2. Comparing patterns of body and sleeve made in Japan to ones made in Italy with J Trial sample and I Trial sample 2.

Point 3. Investigating the design specification sheet of Japan comparing with one made in Italy by a Japanese modelist.

3. RESULTS AND DISCUSSION

3.1 Comparing the trial products made in Japan and Italy

The creative director and the modelist reviewed and discussed the trial product (I Trial sample) of Italy comparing a mass product of Japan (J Mass production sample). Figures 2 and 3 show the trial jackets of clothing hanger and dummy, respectively. Those showed important differences, especially in the appearance of the clothes hanger, comfort, and appearance.

The different characteristics were as follows:

1. The appearance of clothes hanger of the jacket made in Japan showed beautiful lines and shapes as shown in Figures 2(a). The jacket made in Italy showed a more three-dimensional shape and curves as shown in Figures 2(b). This was true even for the clothes hanger.

2. Regarding comfort, the jacket made in Italy showed a looser fit than that of the jacket made in Japan.

3. From a designer's opinion, the jacket made in Italy appeared more "youthful".

(a) J Mass production sample　　(b) I Trial sample

Figure 2: Jackets of clothing hanger.

(a) J Mass production sample　　(b) I Trial sample

Figure 3: Jackets on dummy.

3.2 Silhouette and characteristics of body parts

Figures 4 and 5 show body patterns made in Japan and Italy, respectively. The following are answers to the modelists' questions about Italian patterns compared to Japanese patterns:

a) The percentage of bust, arm and, back width in the chest circumference of the both body

The percentages of front, arm, and back width in the bust circumference of the body were 36%, 26%, and 38%, respectively.

b) The upper and lower body part from the waist line

The part from the waist to the upper body showed relatively fewer amounts of ease. The part from the waist to the lower body showed relatively more amounts of ease. Hip part showed loose fitting line.

c) Characteristic of the front body

From setting the waist line as a boundary, the floating shoulder part in the upper body was eliminated and the front hem of the lower body was made slighter to be able to be pulled out forward to the sides.
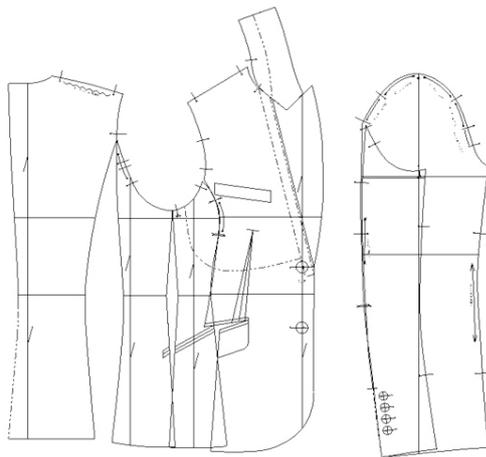

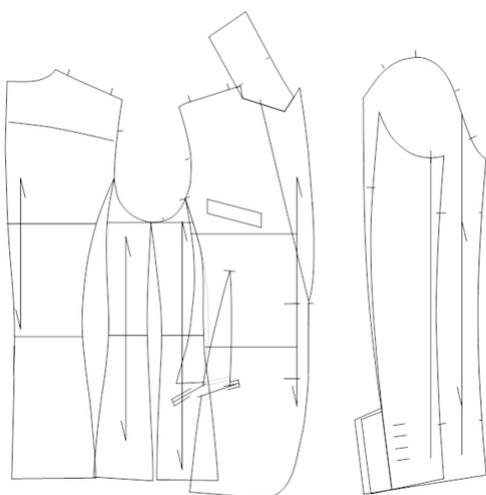**Figure 4**: Jacket patterns made in Japan.

Figure 5: Jacket patterns made in Italy.

d) Overall comfort

By stitching a line at the shoulder, the front body of the jacket was designed to be slipped at the neck point.

e) Cover to body

Against the front armhole, there was slight amount of ease at the back armhole line, and there was also feed at the shoulder line. The body shape can be entirely covered with a margin.

f) Reinforced with interlining

The laminating interlining was considered as necessary in the front body because of low stiffness of the textile.

g) Selection of sewing specifications

The deformation of the entire silhouette was focused in the center of the upper part because of the pocket on the side of the front body. There was a slightly floating dimension at the return line on the label. Thus, sewing specifications must be selected according to the physical properties of the textiles and how it would be worn. The pattern was constructed to easily be sewn, and thus be suitable for mass production.

h) Iron treatment

Although it did not need a lot of special iron treatment, the iron processing normally required for ready-to-wear for high-end was still necessary.

The points described above were the answers to the modelists' own questions. They could have also represented problems that could have occurred in the production process. Therefore, to confirm predicted problems, the modelist in Japan also made a garment with nonwoven or sheeting (Figures 6, 7, 8). In that case, she took into account textile properties different from real textiles.

3.3 Characteristic of sleeve patterns made in Italy

Figure 4 and 5 also show sleeve patterns made in Japan and Italy. The following describes characteristics of sleeve patterns made in Italy compared with those made in Japan, based on the modelists' answers.

i) Sleeve width

In sleeve patterns made in Japan, there was a moderate ease in sleeve width (Figures 5 and 8). The easing amount was also suitable for sewing and the amount of ease was balanced with the height and width of the design.

j) Setting the armscye depth

There was enough length from the bust line to the shoulder line. The armscye was oval with enough ease.

The under sleeve showed strong curve, perpendicular to the grain. Thus, sleeve shape was straight when viewed from the front and back. On the other hand, it showed

Figure 6: J Trial sample.

Figure 7: Jacket patterns made in Italy.

Figure 8: I Trial sample 2 of body with sleeve.

natural curves when viewed from the side.

Same as the sleeve pattern made in Japan, there was also a moderate ease in the sleeve width for the sleeve pattern made in Italy (Figures 5 and 8). Setting of armscye height was structured relatively high to move easily. This was to balance the body's amount of ease.

k) Iron treatment

There was a difference in the length of the front sleeve seam line. Thus, to express a natural curve of the sleeve, iron processing was required.

l) Overall impression

The creative director and the modelist in Japan evaluated that the sleeve line was masculine even though body line was feminine. With ironing processing and a certain texture of textile, the entire image could be balanced.

3.4 Specification sheet for keeping tape and interlining

Figure 9 shows an Italian design of the specification sheet for keeping tape and interlining. With the specification sheet, swatches of those actual samples are attached.

The production process was done to meet the modelist's expectations. However, the work was not easily carried out by only showing the specification sheet for the person in charge of the process work. The steps and orders of the production process must be reviewed and decided. Modelist for mass-production factories need to set the design process as well as the production process. In this step, the specification sheet was interpreted.

The purposes of using keeping tape were to prevent the extension of textile as well as to keep the shape retention. The specification sheet shows both keeping tape and interlining. On the specifications sheet as shown in Figure 9, #2 and #5 were for stopping extension, and #1, #2, and #3 were for preventing extension and retaining the shape. For retaining the shape, after laminating adhesive interlining to the parts, iron treatment was done. Then, the keeping tape was laminated.

It was necessary to decide the ordering of laminating the keeping tape and interlining on the face fabric. This included items such as the ordering of sewing, ironing treatment, laminating tape. Each process was required to be carried out in a continuous process. These considerations had a significant impact on the final product quality.

To maintain "three-dimensional shape", the usage of keeping tape and interlining was considered in the production process taking into account the physical properties of the material at the discretion of the factory in Italy.

For more favorable tailoring, it was necessary to master the technique for interlining and keeping tape in the production process. Usage methods of the tape and interlining were different depending on products.

4. CONCLUSIONS

We investigated differences of jackets that resulted from the different working styles in Japan and Italy. We did this by designing and producing tailored jackets for women of these two countries.

In this study, we investigated details at each stage of production, in particular the jacket silhouette of body patterns and characteristic of sleeve patterns. We also investigated the specification sheet for keeping tape and interlining.
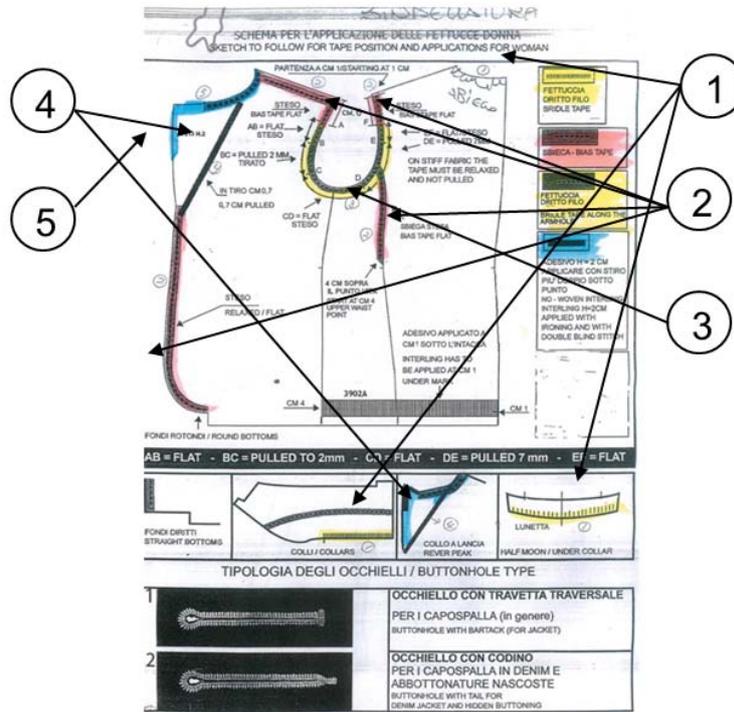
Figure 9: An Italian specification sheet for keeping tape and interlining.

It became clear the patterns and concept of producing a jacket were different depending on the country. The predicted silhouette of bodies made in Japan was more planar shapes and linear lines. On the other hand, the predicted silhouette of a body made in Italy showed loose-fitting lines and three-dimensional shapes. For the interlining and keeping tape, it was also shown that those were used to make more three-dimensional shapes and were more dependent on the discretion of modelists in Italy than those in Japan.

Of course, the comparison of actual produced jackets is necessary. The comparison of actual jackets is described in another paper.

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