

# Research and Investigation of Women's Dress Pattern

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## **ABSTRACT**

*The aim of this paper is to research and investigate the women's dress pattern by using conventional women's dress constructions, more specifically by comparing three different ways of constructing women's dress patterns. Women's dress construction methods of B. Knez, J. Slaviček and „Rundschau“ are compared and respective women's dress prototypes are made from calico. Based on the best features and visible results obtained from the three pattern constructions, as well as the appropriate body-related adaptability, a new women's dress pattern is produced featuring different pattern parts in natural size. The new women's dress pattern is investigated and used in the education of next generation fashion and costume designers in view of practical application.*

## **KEYWORDS**

*Dress construction, women's clothes, modelling, cutting, garment construction*

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## **INTRODUCTION**

Clothes make the man, and the aesthetic appearance of clothing and related clothing items derives therefrom. The aesthetic appearance of a clothing item has to satisfy the consumer in relation to its appearance and harmonious connection of all components, such as pattern, shape and dimensions. When designing a clothing item, functionality requirements have to follow its purpose and type. The purpose should be taken into account during its construction, since every piece of clothing has its specific wearing-comfort characteristics. The clothing item must fit the dimensions and specific features of the human body. Every piece of clothing is sewn together from several pieces of fabric, which then give it its specific shape. The pattern allows customization to the body. For that purpose, a women's dress has been created as a product of need and protection. As a practical product, a women's dress is very comfortable and plays an important role in everyday clothing (Figure 1).

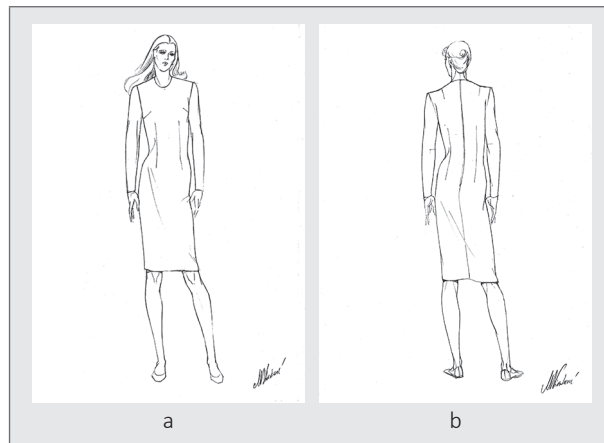


Figure 1. Fashion project involving women's dress: a) front; b) back

Clothing comfort results from a good pattern, which adapts to changes following the natural laws of body movement, and therefore implements the knowledge of human anatomy. The basic pattern of any clothing item is the starting point for creating a model pattern. Therefore, based on a good basic woman's dress pattern, other similar clothing items and models can be modelled. The basic pattern is set according to certain measurements. In its basic shape, the pattern can not be used in tailoring, but it should be altered according to the design requirements of the model.

The prototypes of characteristic models are made to verify patterns, which then in turn represent individual groups of patterns. Subsequent examination is thereby carried out, and the correctness of the previously made basic model pattern is established [2].

The idea of designing and producing the new basic woman's dress pattern was imposed due to inadequate woman's dress constructions adaptable to the female body, and not enough constructions are actually adapted to today's female body in practical application. The aim of this research and investigation of the woman's dress pattern is to propose a new basic woman's dress pattern as opposed to the previously existing basic woman's dress patterns.

## EXPERIMENTAL

### Materials and Methods

#### *Construction of women's dresses*

Before constructing any type of clothing, which includes a woman's dress, the following are determined: main body measures, calculated body measures, calculated construction measures and additional measures, as found in literature [7].

Based on the calculated measures, the basic pattern is constructed and subsequently modelled into the desired pattern shape. This chapter describes three methods of constructing a woman's dress: according to B. Knez, J. Slaviček and „Rundschau“ [2, 5, 8]. Each construction method differs from the previous one in the method of calculating constructional and additional measures, as well as in the method of constructing the woman's dress itself. On the other hand, they share the same main body measures and the clothing size 38. The description of women's dress pattern construction according to B. Knez, J. Slaviček and „Rundschau“ may be found in literature [7]. The basic pattern constructions are shown in Figures 2.a-2.c.

In the clothing industry, sleeve design has always represented a special challenge. Issues usually occur in attaching the sleeve to the armhole. It can be very difficult to find the proper relation between the armhole



*Modelling of basic woman's dress pattern, clothing size 38*

Modelling consists of performing corrections on the basic pattern: moving darts and seams, determining new dividing seams, adding folds, adding allowance for the bell-shaped form, adding allowance to garment length, and other [9,10]. After woman's dress construction, each part needs to be modelled separately. If a dress is constructed from a single back part, it is necessary to model the basic pattern of the front part. The back part should be modelled only if the dress has no seam in the central front part, or the dress model has a more accentuated waist [5].

Modelling methods differ from one author to another. This chapter demonstrates dress modelling according to the abovementioned authors. This part of modelling is divided into three parts: modelling of woman's dress front, modelling of woman's dress back, and modelling of woman's dress sleeve.

Figure 4 demonstrates the procedure of modelling the woman's dress front in phases (Figures 4.1-4.4), and the description may be found in literature [7]. Figure 5 shows the modelling of woman's dress back without shoulder dart, with shoulder dart and of the narrow sleeve with seam allowances (Figures 5.a-c).

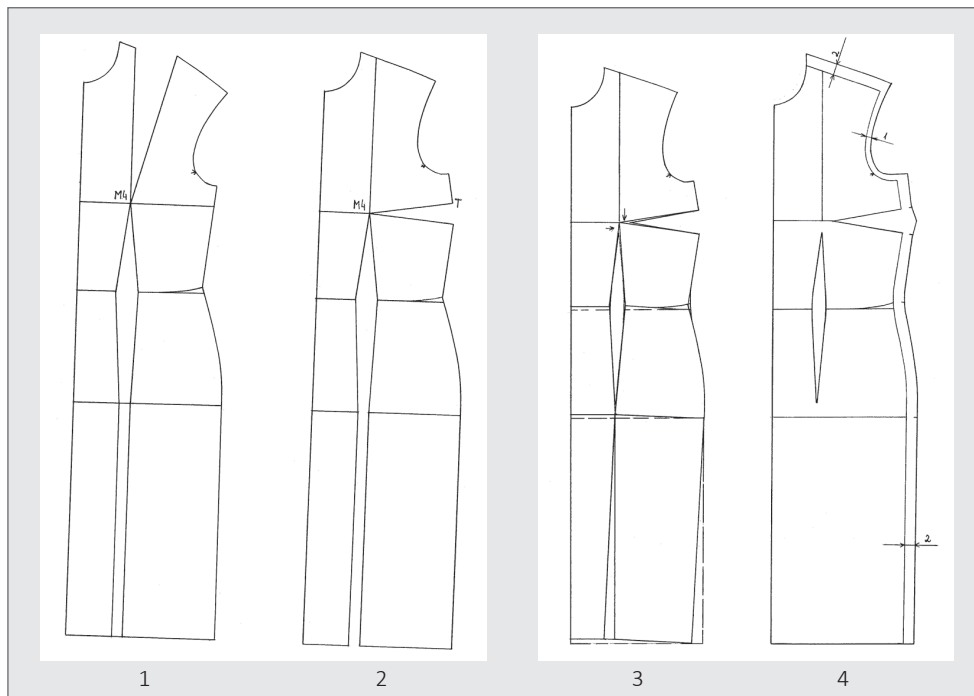


Figure 4. Modelling of woman's dress front according to B. Knez in four modelling phases 1, 2, 3, 4

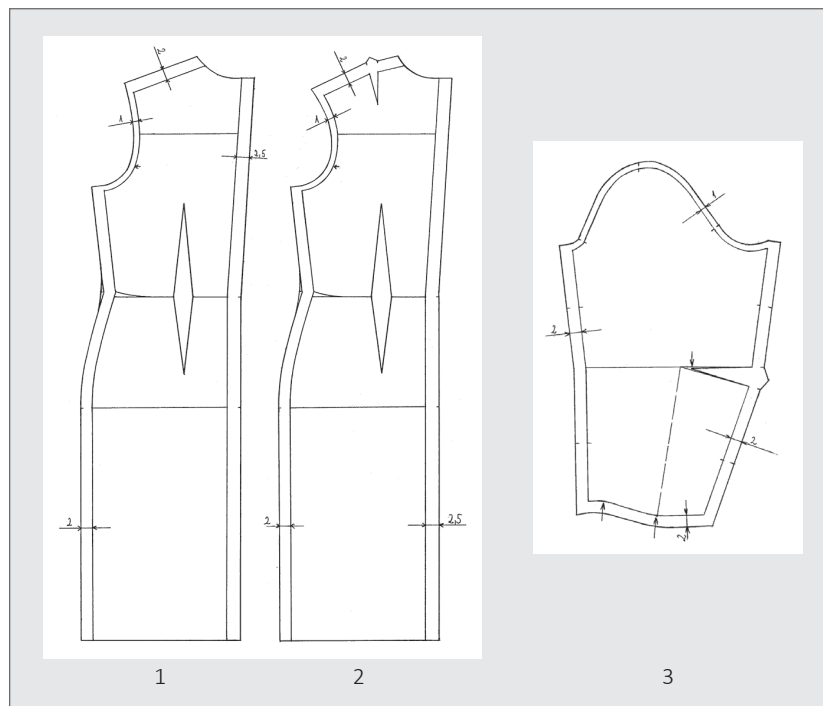


Figure 5. Modelling of woman's dress back according to B. Knez: a) without shoulder dart; b) with shoulder dart; c) sleeve with seam allowances

Modelling of the basic woman's dress pattern according to J. Slaviček is shown in Figures 6-8.

Figure 6 demonstrates the modelling procedure for the woman's dress front in phases (Figures 6.1-6.4). The modelling procedure for the woman's dress back without the shoulder dart is depicted in Figures 7.1-7.4. Figure 8 shows the modelling of the narrow sleeve pattern with a normally placed seam and seam allowances.

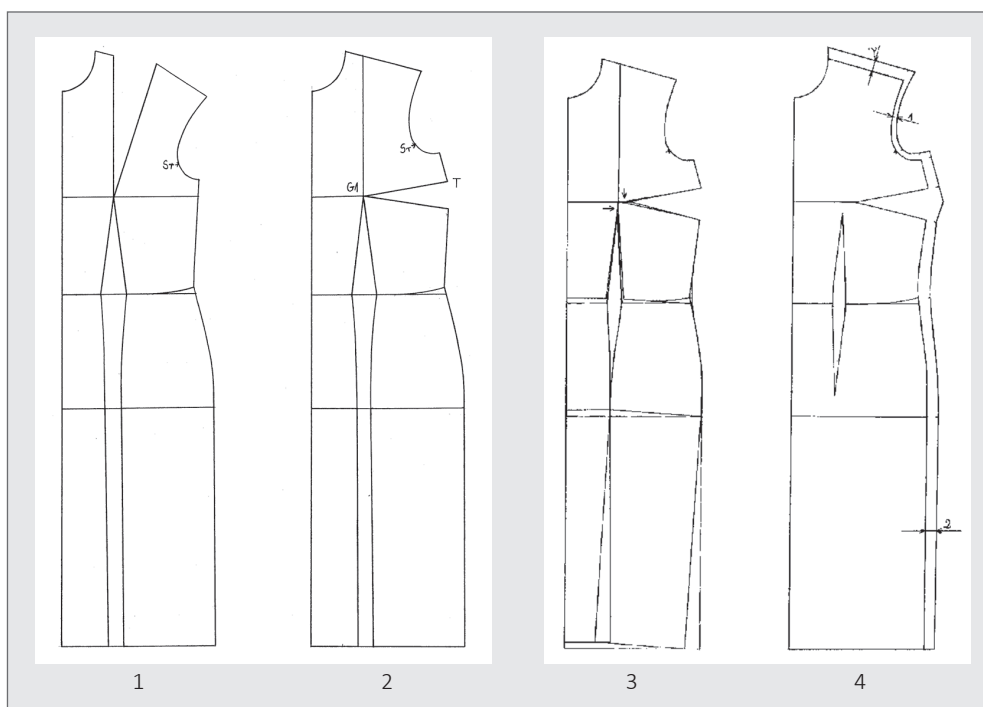


Figure 6. Modelling of basic woman's dress front according to J. Slaviček in four modelling phases 1, 2, 3, 4

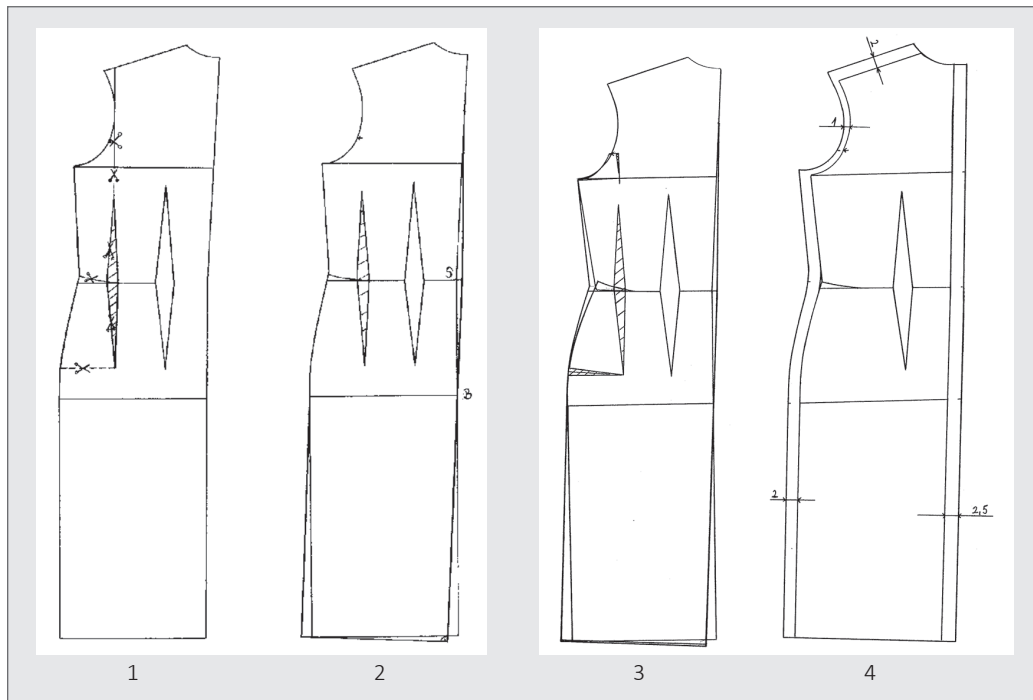


Figure 7. Modelling of woman's dress back pattern according to J. Slaviček in four modelling phases 1, 2, 3, 4

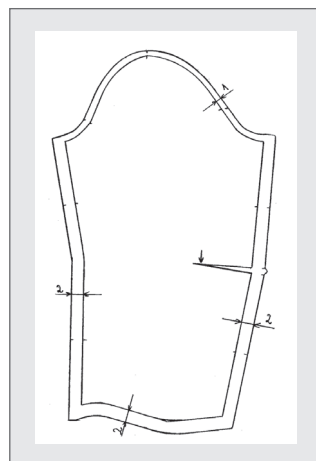


Figure 8. Modelling of narrow basic sleeve pattern with normally placed seam, according to J. Slaviček

Modelling of the basic woman's dress pattern according to „Rundschau“ is demonstrated in Figures 9–11. More specifically, Figures 9.1-9.4 depict the 4 modelling phases of dress front. Figures 10.1-10.4 show the three modelling phases of dress back. Lastly, Figure 11 demonstrates the modelling of the narrow sleeve with a normally placed seam with seam allowances.

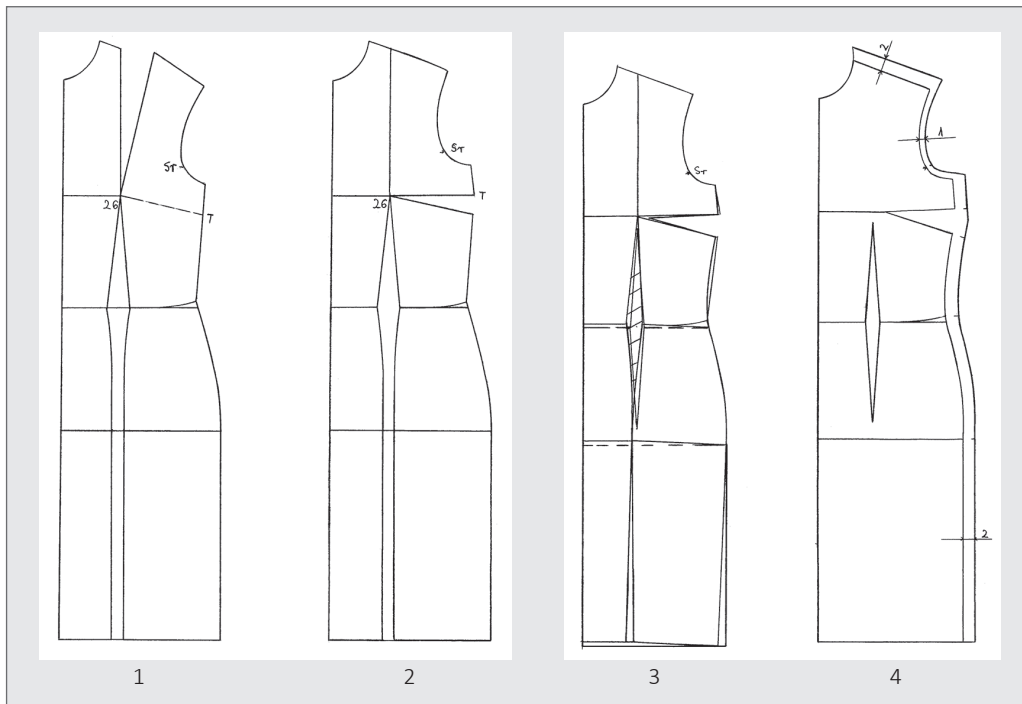


Figure 9. Modelling of basic woman's dress pattern front according to „Rundschau“ in four modelling phases 1, 2, 3, 4

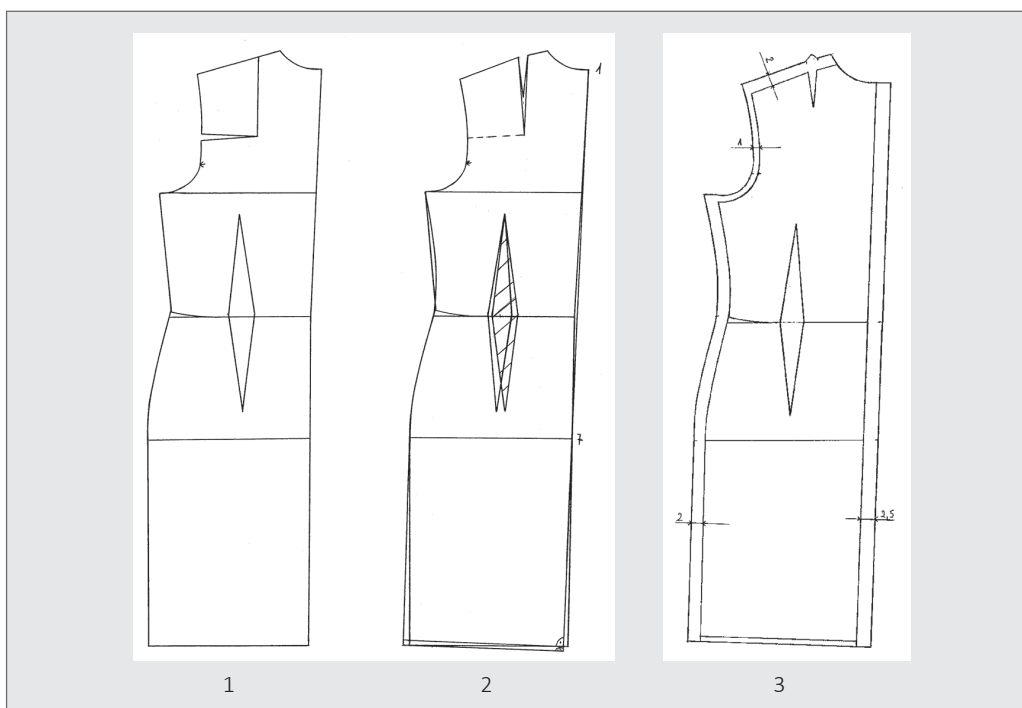


Figure 10. Modelling of woman's dress pattern back according to „Rundschau“ in three modelling phases 1, 2, 3

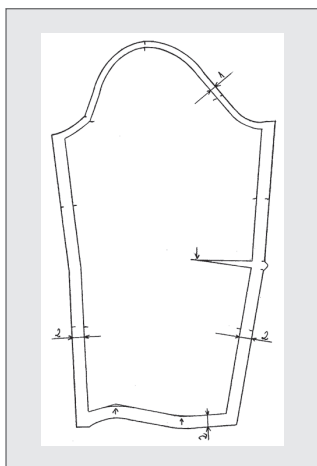


Figure 11. Modelling of narrow basic sleeve pattern with normally placed seam, according to „Rundschau”

### Pattern investigation

Based on modelling, the woman's dress pattern of the abovementioned authors was enlarged to natural size. The calico fabric was used for pattern investigation because of its naturally adaptable features and characteristic to show all mistakes, just like paper. Firstly, red thread was used to sew together the following parts of all three woman's dresses for clear recognition: centre front, bustline, waistline, hipline and centre back. Secondly, darts were sewn in and other dress parts were sewn together along with one sleeve, the right sleeve. After all dresses were joined together, they were tested on the mannequin. After that, a model was wearing the dresses and the investigation was made, so as to observe the differences between the dresses and possible mistakes.

The observed differences between the woman's dress prototypes and certain mistakes are explained in Table 1. Furthermore, based on detected deficiencies, a new woman's dress pattern was created.

Table 1. Remarks and explanations relating to woman's dress patterns of: a) B. Knez; b) J. Slaviček; c) „Rundschau”

a	b	c
<ul style="list-style-type: none"> <li>- The bust girth is a good - it follows the body line</li> <li>- The waistline is good - it follows the body line</li> <li>- The hipline is good - it follows the body line</li> <li>- The sleeve cap depth is good – the ease of the sleeve is detected</li> <li>- The front neckline is not good –it is very high and it suffocates (correction is needed here)</li> <li>- The sleeve is too large in the upper sleeve curve area (armhole girth)</li> <li>- The back neckline - a bit too high but that is an error on the mannequin</li> <li>- Sleeve width - a bit narrow, the sleeve should be slightly wider</li> </ul>	<ul style="list-style-type: none"> <li>- The bustline is good - it follows the body line</li> <li>- The waistline is too high, too wide - it should be lowered and narrowed because in that part the dress is too loose fitted- it doesn't follow the body line</li> <li>- The hipline is not good - it doesn't follow the body line because the hips are very wide at the side seam area</li> <li>- The front neckline is not good - it is very high and it suffocates</li> <li>- The back neckline is good</li> <li>- The sleeve in the sleeve curve area is good – it matches the armhole on the dress, it is not wide</li> <li>- The sleeve length is slightly shorter (it should be extended)</li> <li>- The shoulders are narrow</li> <li>- The sleeve cap depth is good</li> <li>- The sleeve in the elbow area is narrow and tightens when bending</li> <li>- The centre front is good</li> <li>- The area from the neckline to the bustline is too loose fitted - it doesn't follow the body</li> <li>- The breast width in the bust area is slightly wider, and the area from the bustline to the waistline on the side seam is wide</li> <li>- The sleeve cap depth is too small - it reaches too far into the armpit and it tightens</li> <li>- The darts following the body line in the hips area are wide - 2 cm is the total excess</li> </ul>	<ul style="list-style-type: none"> <li>- The bustline is good - it follows the body line</li> <li>- The waistline is good - it follows the body line</li> <li>- The hipline is good - it follows the body line</li> <li>- The front neckline is not good - it is very high and it suffocates</li> <li>- The back neckline is too high, it is not good and it suffocates</li> <li>- From the neckline to the bustline – there is a clean line, nicely following the body without any errors, there is no pulling of the material or excessive fullness, and in the back area the line is clean</li> <li>- The shoulder position is very good and fits beautifully</li> <li>- From the hipline to the bustline, there is a clean line on both the front and back. However, the side seam does not follow the body line and deviates – it is slightly wide</li> <li>- In the hips area, the line is clean, the darts hang nicely as well as in waist area facing upwards. However, in the side seam area it is very wide – there is a deviation of about 3 cm</li> <li>- The sleeve is not good because the armhole girth is too small and the sleeve tightens a lot. It does not hang well, but hangs forward and creates a dent on the back side of the sleeve – the sleeve width in the underarm sleeve length area is good</li> <li>- The sleeve cap depth is too small, it reaches too high, the sleeve in the curve does not hang well, the back has a lot of excess fabric</li> <li>- it is overstretched in the armhole</li> <li>- The sleeve tightens in the elbow area</li> </ul>



CONCLUSION:		
This dress follows the line of the body and is very good.	This dress is for persons with narrow shoulders and wide hips.	The measures for this dress are not adjusted to our measures from our standard, and therefore the construction is not adequate.

Conclusion: The new woman's dress should be constructed according to B. Knez [2, 7], specifically following method b. However, it should be combined with the sleeve construction of J. Slaviček [5] with a normally placed seam (Figure 3.b), and respective measurement taking. According to the previous investigation the construction of such a sleeve should correspond to the abovementioned dress (Figures 1.a, 1.b).

*Sleeve correction*

The sleeve should be constructed by using the measures from B. Knez's construction, yet according to J. Slaviček's construction. This construction is shown in Figure 12.

*The sleeve pattern construction with a normally placed seam*

The measurements required to construct the sleeve are taken from the construction drawn in Figure 2. The same Figure is used to measure the armhole height and the armhole girth [5, 7]. The armhole height is measured by placing the measuring tape at the armhole peak at point R7, and guiding it diagonally downwards to point Šo placed at the dress front. The front part amounts to 17.6 cm. Regarding the back part, the measuring tape is placed at point R2 and guided vertically downwards to the Og line. The back part amounts to 17.2 cm. The armhole height of the front and the back part amounts to 34.8 cm. The armhole girth is measured by placing the measuring tape vertically at point R7, and guiding it along the armhole line to point P and onwards along the back armhole to point R2. This measure amounts to 42 cm [7].

The description of the sleeve with a normally placed seam may be found in the following paragraph. Moreover, the description of this sleeve has already been provided in [5, 7], only with different measures (armhole height and armhole girth).

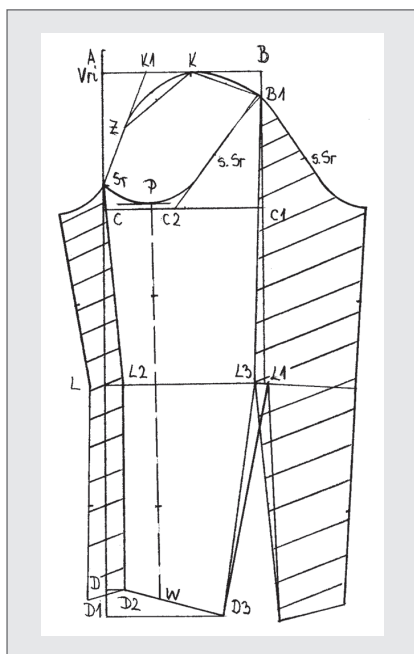


Figure 12. Construction of a narrow sleeve pattern with Correction 1\*\*\*

Correction 1\*\*\* - with a normally placed seam according to measures from the construction of B. Knez and according to J. Slaviček, (Figure 12).

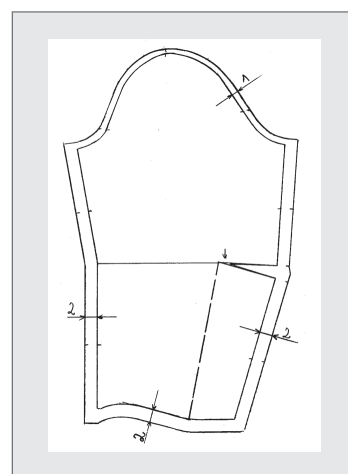


Figure 13. Sleeve modelling with Correction 1\*\*\* including seam allowance for pattern investigation

Figure 13 shows sleeve modelling with Correction 1\*\*\* and the seam allowance for the test sleeve. Based on this sleeve, there was a remark that the sleeve was pulling while lifting the arm. This problem should be solved by modelling.

#### *Sleeve modelling with Correction 1\*\*\**

Figure 14 shows four ways of sleeve modelling with Correction 1\*\*\*. The 1<sup>st</sup> method is shown in Figure 14.1. On this sleeve, the dart is closed in the underarm sleeve length and is transferred to the sleeve seam. Point K is marked on the elbow line perpendicular to the notch on the peak of the sleeve cap.

A marking is placed 3 cm downward from the sleeve cap depth line on the left and right side, and these points are connected with a straight line. The drawn lines are markings for pattern cutting. The sleeve is lifted upwards by 0.6 cm in the elbow area, and the upper part of the sleeve is moved by 3 cm to the left and to the right.

This is how the straight dart is closed downwards. On the extended section, the dart it is shifted 3 cm, and extended in the side seam of the sleeve. After that, modelling is performed in the sleeve seam on both sides, and a bit on the sleeve cap. Seam allowances of 2 cm are added at the seams, 1 cm at the sleeve cap, and there are no allowances on the sleeve length. This sleeve didn't prove to be good because we got an extension of the sleeve and the modelling was not performed accurately.

The 2<sup>nd</sup> method of sleeve modelling with the correction 1\*\*\* is shown in Figure 14.2. A cut of 1 cm is made perpendicular to the elbow height to point K in the seam area. The pattern is moved by 0.5 cm upwards in the elbow area and the slit sleeve part is moved by 1 cm to the left and to the right at the marked position. An overlapping of the sleeve occurred on the top of the slit parts, the hatched area.

The 3<sup>rd</sup> method is depicted in Figure 14.3. This sleeve is made the following way: it is also cut perpendicular to the elbow line with a straight line to point K in the middle of the sleeve. The sleeve is moved upwards by 0.5 cm, and on the slit parts it is moved by 2 cm to the left and right side. The upper part of the slit sleeve is folded to the extent necessary to make the sleeve adhere to the flat surface, hatched area in the Figure. The dart peak is shortened by 2 cm, see the arrow shown in the Figure.

The 4<sup>th</sup> method of sleeve modelling is shown in Figure 14.4. This sleeve is made according to the system in Figures 14.2 and 14.3, i.e. by joining both methods from the Figure. This sleeve is made as follows: A cut is made of 1 cm under the top of sleeve cap depth and in the sleeve cap, and along the middle of the sleeve to point K. It is moved by 0.5 cm upwards from the elbow line, and by 1.5 cm on the left and right side.

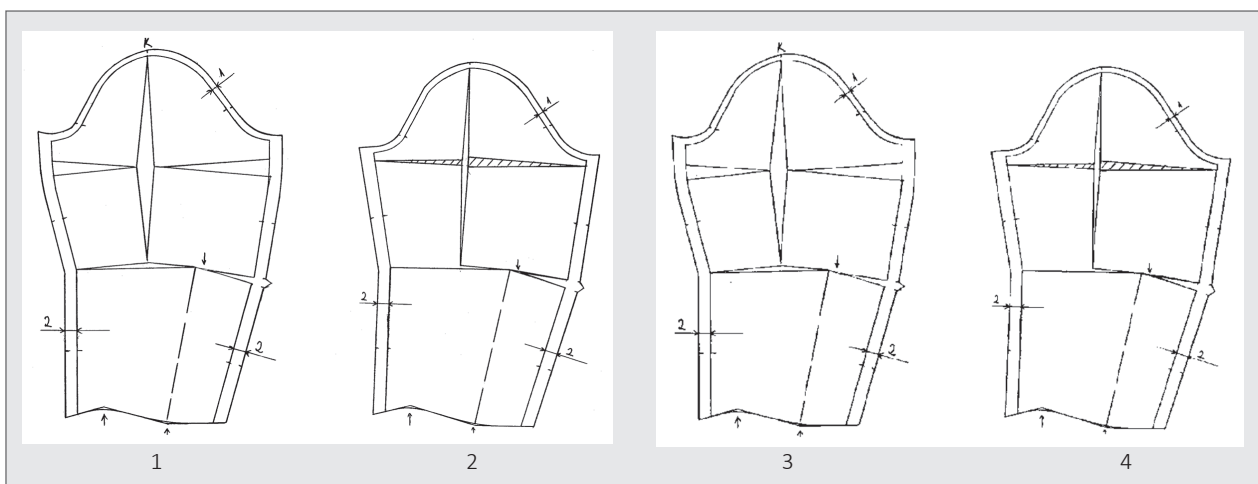


Figure 14. Four methods of modelling a narrow sleeve with Correction 1\*\*\*

The slit sleeve pattern parts are moved so that each piece is folded by 0.7 cm, so that the sleeve pattern adheres to a flat surface (the hatched area in the Figure).

Conclusion: Based on the above-modelled sleeves, the decision was made that the 2<sup>nd</sup> modelling method proved to be very good. This sleeve created the least amount of excess fabric on the back part of the sleeve and least tension in the elbow area. This modelling method leads to aimed results, meaning that the sleeve does not pull while lifting the arm. In 3<sup>rd</sup> method, the armhole width was too small and it needed to be extended for persons with wider arms. The 4<sup>th</sup> method is good for wider arms and there is no pulling while lifting the arm.

Furthermore, a 36-sized woman's dress pattern was created for the needs of fashion models. Based on woman's dress construction of clothing size 38, clothing size 36 is made according to literature [7], by using appropriate measures. When constructing a woman's dress another way of sleeve construction was applied according to the pictures and the explanation, which was appeared to be an appropriate sleeve for a new basic dress pattern. The sleeve I have above mentioned is a sleeve with a forward moved seam, but it is constructed according to a normally placed seam with some modifications.

In the clothing industry, it is common to place the seam of a narrow sleeve where it is attached to a side dress seam. A long narrow sleeve with a normally placed seam on the side seam often pulls in the elbow area, and it is uncomfortable when wearing. To avoid this unpleasant occurrence, it is recommended to move the seam forward onto the front part of the sleeve. By moving the seam forward, the sleeve becomes more comfortable and does not tighten during arm movement. This sleeve should be designed very close to the arm, especially for formal clothing. For models, it is not necessary to change the shoulder cap shape, although such sleeves are very narrow at the elbow height and the wrist.

## RESULTS AND DISCUSSION

### *Corrections of all 38-sized woman's dress pattern parts*

Correction 2\*\*\* - Sleeve with the seam moved forward is performed according to construction measurements of B. Knez, and according to the basic pattern construction of J. Slaviček (Figure 15).

Correction 3\*\*\* - It is performed by creating a point 0.5 cm from point B1 towards the line connecting B1 and L3, and then shaping a new line in the back part, according to Figures 15 and 17.

Correction 4\*\*\* - The woman's dress front and back feature changes which occurred during pattern investigation according to construction measures of B. Knez and the construction of J. Slaviček. The changes are marked with a full line in Figure 16. The procedure is as follows: a new armhole back is formed by shifting the F-F1 line 0.5 cm to the right, and the centre front is shifted by 1.5 cm to form the neckline.

Correction 5\*\*\* - The woman's dress front and back feature changes which occurred during pattern investigation according to construction measures of B. Knez and the construction of J. Slaviček. The changes are marked with a dashed line in Figure 16.

Correction 6\*\*\* - The sleeve length features changes which are marked on the modelled narrow sleeve. The procedure is as follows: The back neckline centre is lowered by 1 cm, and the shoulder by 0.5 cm. A new neckline is modelled according to the neckline front centre, which is lowered by 1.5 cm (Figure 18).

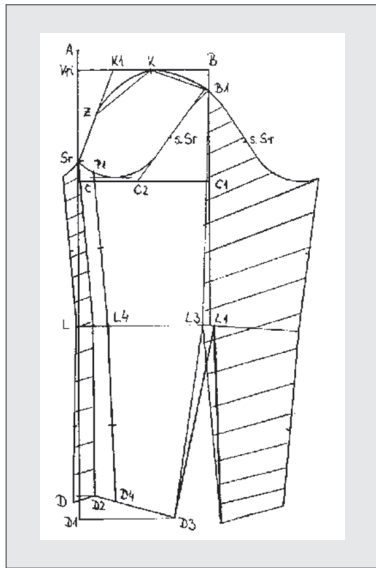


Figure 15. Construction of a narrow sleeve with Correction 2\*\*\*

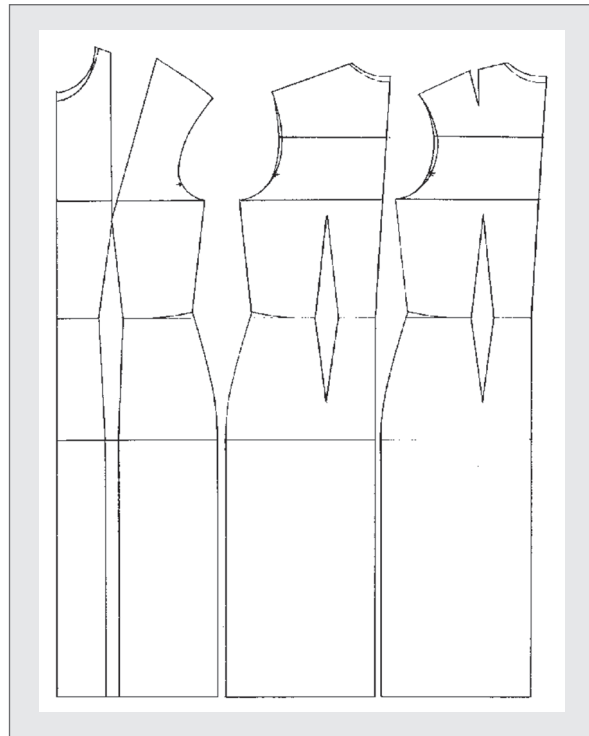


Figure 16. Basic woman's dress pattern parts with Correction 4\*\*\* according to B. Knez

Construction of a narrow sleeve with a correction 3\*\*\* performed on correction 2\*\*\* clothing size 38 is shown in Figure 17.

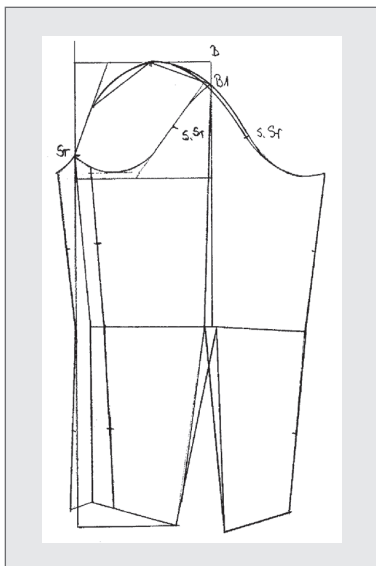


Figure 17. Construction of a narrow sleeve with Correction 3\*\*\* performed on Correction 2\*\*\*

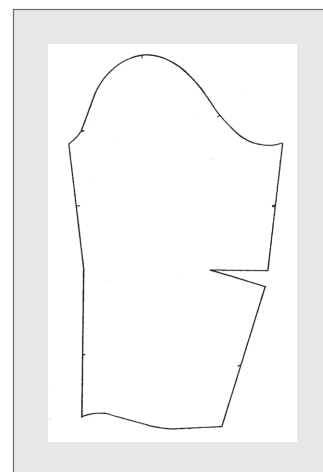


Figure 18. Modelling of a narrow sleeve with Correction 3\*\*\* performed on Correction 2\*\*\* and Correction 6\*\*\*

Figure 18 depicts the new basic sleeve pattern of a woman's dress. Based thereon, the new basic women's dress pattern parts with seam allowances were generated, which were later used in fashion projects in natural size.

Based on the investigation, research and conclusions, we have obtained new basic pattern parts. The new basic pattern parts obtained after Corrections 2\*\*\* to 6\*\*\* are shown in Figures 19. a, b, c, d.

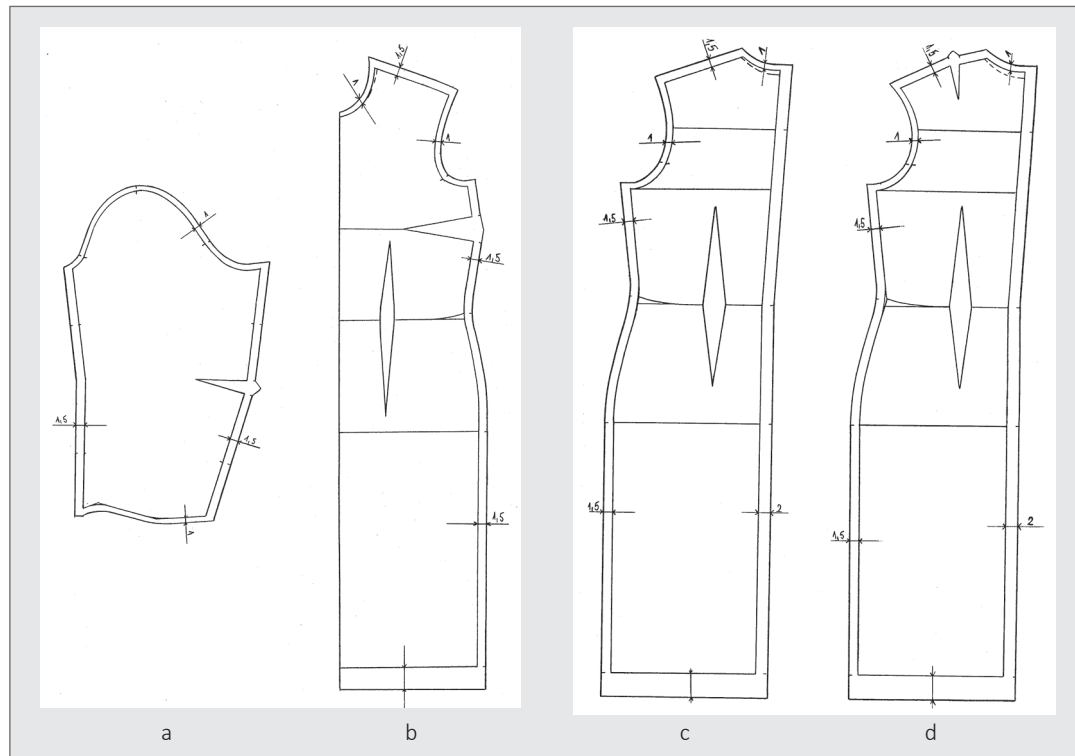


Figure 19. New basic dress pattern parts with seam: a) sleeve; b) front part; c) back part without shoulder dart; d) back part with shoulder dart

## CONCLUSION

Researching, investigating and modelling dress constructions produced a new pattern of woman's dress. Pattern adjustment was performed according to the contemporary female anatomy.

As a result, the new dress pattern was proposed for the purpose of easier realization of future models in view of practical application. The new pattern presented in this paper was derived from the comparison of three different conventional women's dress constructions. Pattern parts were developed in natural size for clothing sizes 36, 38, 44 and 54. As such, they have been applied in the work and personal use of generations of fashion and costume designers.

### *Acknowledgements*

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## REFERENCES

- [1] Garcia N. Mala crna haljina stila. Zagreb: Algoritam; 2009.
- [2] Knez B. Konstrukcijska priprema u odjevnoj industriji. Zagreb: Sveučilišna naklada d.o.o.; 1990.
- [3] Malalan A. Super krojenje. Zagreb: Mozaik knjiga; 2012.
- [4] Thomass C, Örmén C. Povijest donjeg rublja. Zagreb: ALFA; 2011.
- [5] Slaviček J. Konstrukcija odjeće za haljine, bluže, suknje, žensko i muško rublje. Zagreb: 1977.
- [6] Jennifer Lynne Matthews-Fairbanks. Pattern Design: Fundamentals: Construction and Pattern Making for Fashion Design [Volume 1.]. Fairbanks Publishing, LLC: 2018.
- [7] Kocijančić Đ. Ispitivanje i gradiranje kroja ženske haljine [Master thesis]. Zagreb: 1996.
- [8] Schneiderei Schnittmuster, Konstruktion Rundschau Damen. Rundschau. 1992 Jan; 18
- [9] Schnittkonstruktionen für Kleider und Bluse. Rundschau-Verlag Otto G. Königer; 2014.
- [10] Ujević D, Rogale D, Hrastinski M. Tehnike konstruiranja i modeliranja odjeće. Zagreb: Tekstilno-tehnološki fakultet; 2000.