

Burial Robes of the Polish King Sigismund III Vasa. Analysis of Textiles and Clothing

Maria Cybulska^{1*}, Anna Drażkowska²

¹ Lodz University of Technology, Institute of Architecture of Textiles, 116 Żeromskiego Street, 90-543 Lodz, Poland

² Nicolaus Copernicus University in Toruń, Institute of Archaeology, Szosa Bydgoska 44/48, 87-100 Toruń, Poland

* Corresponding author. E-mail: maria.cybulska@p.lodz.pl

Abstract

The subject of the paper are the grave robes of the Polish King Zygmunt III Vasa, resting in the crypt in the Archcathedral Basilica of Saint Stanislaus and Saint Wenceslaus on the Wawel Hill in Kraków. The studies presented were possible thanks to an 'in situ' analysis of the clothes and a possibility of taking samples of textiles from which the clothing was sewn. The paper presents the results of a comprehensive textile analysis of fabrics, a description of the clothing that made up the funerary robes and analysis of the results obtained in the context of historical sources and works of art depicting the monarch.

Keywords

burial clothes, archaeological textiles, history of clothing and textiles, Sigismund III Vasa.

1. Introduction

Textiles from royal crypts are rarely subject to analyses due to the special nature of burials. Also in Poland, access to the royal crypts in the Wawel cathedral was and is still difficult for scientists. In 2018, the remains of Polish King Sigismund III Vasa, placed in a metal sarcophagus in one of crypts in the Krakow cathedral on Wawel Hill, were explored by a team of scientists under the direction of Prof. Drażkowska. The research could be undertaken because the sarcophagus was to be maintained and the king's remains were transferred to a temporary coffin for the time of the work. Due to the fact that the king's sarcophagus was already opened several times in the 18th and 19th centuries and in 1926, the remains and the clothes covering them had been moved and did not lie in the anatomical system [1]. The king's robes were very discoloured, dirty, crumpled and partly slipped from the skeleton. They lay in disarray, which significantly hindered the determination of what order they had been put on the dead body of the king. Costume analysis was carried out in situ in the crypt (Figure 1). It was also allowed to take small samples from some clothing items, in such a way as not to destroy or disintegrate them in any way.

The subject of the research presented are clothes found in the sarcophagus in

which the body of King Sigismund III Vasa was laid in the tomb: a cope (a royal robe), a dalmatic, clothing reminiscent of an alb, a cassock, a doublet, a cap, gloves, stockings and shoes. Although the royal sarcophagus has been opened several times, the textiles have never been analysed. The purpose of the article is to present the results of costume analyses of the royal robes and technical analyses of the fabrics from which they were sewn.

In addition, the possibility of checking in which robes the king was buried in the grave arose, whether they were really the coronation robes in which Sigismund III Vasa is shown in portraits.

2. Research methods

All samples of textiles were documented using a high resolution scanner.



Fig. 1. At the top: Remains of the Polish King Sigismund III Vasa, 3D scan by Jakub Curyło, Cybid company; at the bottom: in situ dalmatic and gloves, photos by Anna Drażkowska

Microscopic and macro photographic images were analysed to assess materials, estimate structural parameters of threads and fabrics and analyse manufacturing techniques. Textile samples were analysed also using a scanning electron microscope 200F coupled with energy-dispersive spectroscopy EDS and high performance liquid chromatography HPLC for metal and dyes analysis. Results are the subject of a separate publication.

Costume analysis took place in situ in the crypt, during a short time when the king's body had been moved to a temporary casket.

3. Results of analysis of textile materials and techniques

Samples of textiles from the king's clothing were analysed and the results are presented in Table 1. For the chosen textiles, diagrams were drawn presenting the weaving techniques. The terminology applied to the description of historical textiles is consistent with the standards recommended by the Center International d'Etude des Textiles Ancien [2].

All textiles were made of silk and metal threads. They include woven patterned and plain silk fabrics, embroidery and decorative haberdashery made mainly of metal threads.

The dalmatic, presented in Figure 3, is made of silk taffeta embroidered with doubled metal thread. The embroidery creates a simple geometric ornament made of diagonally arranged segments of a metal thread, changing their orientation in successive rows. It is made with a simple running stitch, diagonally along the entire fabric, which gives an identical embroidery effect on the fabric face and reverse side.

Despite the simplicity of the stitch and the ornament, it required embroidery skills due to the thickness of the plied metal thread in relation to the delicate background fabric.

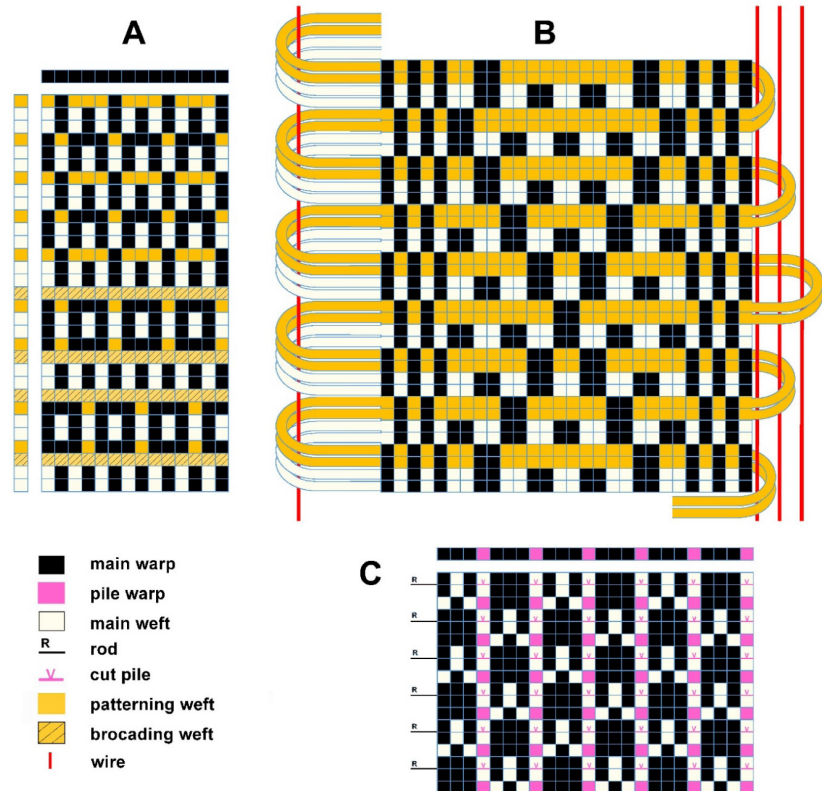


Fig. 2. Weaving techniques: A. Fabric of the cope: Gros de Tours patterned and brocaded; B. Trimming of the dalmatic-patterned galloon with fringes and decorative loops; C. Coffin upholstery – solid velvet. Illustration by Maria Cybulska

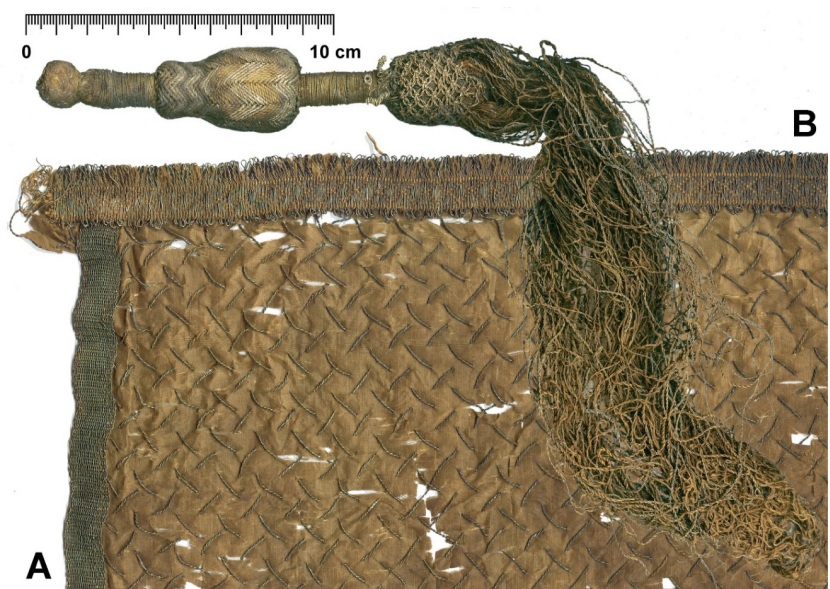


Fig. 3. Dalmatic: silk taffeta embroidered with a metal wrapped thread, tassel and trimmings: A plain and B- patterned galloons. Photos by Maria Cybulska

The dalmatic is trimmed with two types of decorative woven band made of silk and metal thread, called a galloon. At the waist and chest level, a galloon in a plain weave made entirely of metal thread used

as the warp and weft is sewn to the cloth (Figure 3 A).

The sides and bottom of the dalmatic are trimmed with a galloon with a rhomboid

pattern, with silk and gold fringes on one outer edge, and finished with decorative loops of variable height made of metal thread on the other side (Figure 3 B). These types of edges of decorative galloons and ribbons were made by attaching wires to the loom at a specific distance from the side edge of the fabric, which were tied up by the weft thread (Figure 2.B) [3, 4].

The galloon is woven in a compound weave with one warp, a main weft of silk and a supplementary patterning weft of a metal wrapped thread. The main weft is bound by a warp in a basket weave and in a transverse rep on the edges. The patterning weft is bound by two subsequent warp ends, the floats of which form a rhombus pattern on a metallic background. At the selvages of the galloon, the patterning weft is bound by successive warp ends together with the main weft, which gives the effect of stripes along both edges of the decorative band (Figure 2B and Figure 3 B).

The fabric of the cope (the robe) is made in a compound weave, with one warp, a main weft and supplementary weft: patterning and brocading. A flat metal thread, called lamella, is used as the patterning weft, and a wrapped metal thread as the brocading weft, which runs together with a thin silk thread to enhance the decorative effect of the gold. The background for the motifs is woven in a 1/1 (0,1,0) rep known as a Gros de Tours [2]. The surface of the fabric is covered with a silver lamella, which runs once on the face and once on the reverse of the fabric, tied with every other warp end in a plain weave (Figure 2 A). This makes the fabric shine metallically also on the reverse.

The main ornament consists of small plant motifs brocaded with a thread wrapped with a lamella made of gilded silver (Figure 4). This type of pattern is typical for the 2nd and 3rd decades of the 17th century, when in Italy under the influence of Baroque, a trend was created for an open composition of a pattern and single plant and floral motifs [5, 6].

An interesting fact is that in the places of the brocaded motifs, the lamella threads

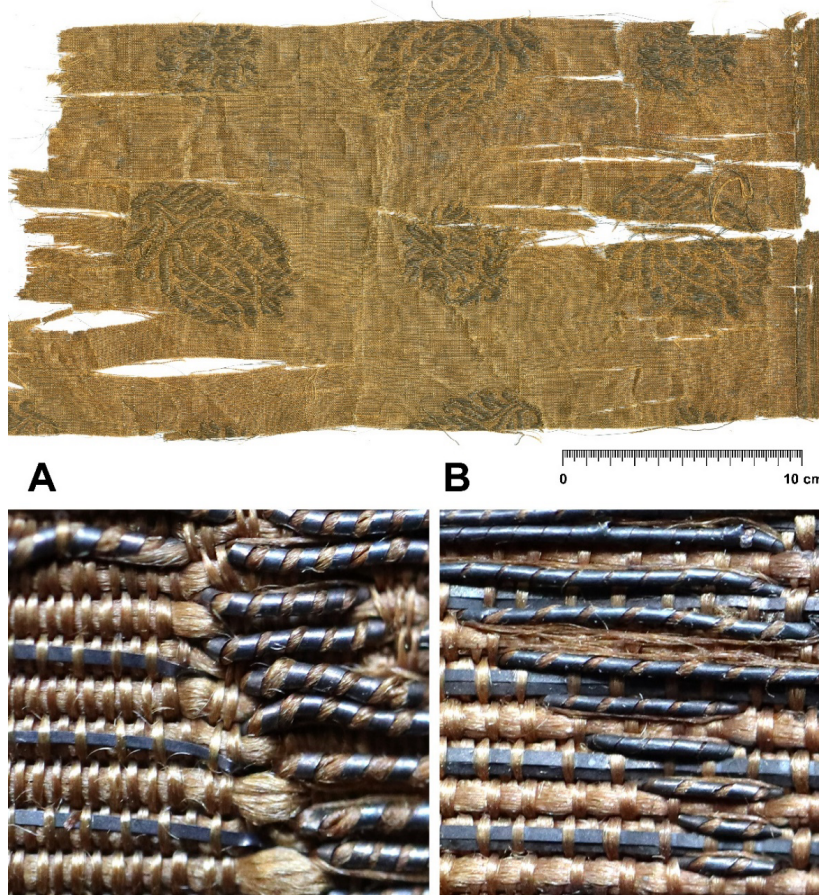


Fig. 4. Fabric of the cope, Gros de Tours patterned and brocaded. At the bottom: details of the fabric face (on the left) and reverse (on the right). Photos by Maria Cybulska



Fig. 5. Fragment of doublet. A – detail of the main fabric, B – embroidered trimming, C- button, D lace. Photos by Maria Cybulska

are only on the reverse of the fabric (Figure 4 B), where they are bound in pairs together. Thanks to this treatment, the fabric gives the impression of being double-sided, and perhaps this was the goal of the designer and weaver. In addition, the brocaded motifs become more expressive because of the silk outline.

The doublet was sewn from brocaded Gros de Naples with a fine pattern of stylized, simplified asymmetric flower twigs, arranged diagonally and directed oppositely in successive rows (Figure 5). These types of silk designs became popular in the late 16th century and were still produced in the first half of the 17th century. They were imported to Poland from Italy, most of which were made of velvet, damask, or as fabrics brocaded with metal thread. Although, according to the archival sources, these fabrics were less popular in Poland than large-patterned silks, similar fabrics were found in burials in the crypts of St. Francis of Assisi in Krakow. [4, 5]

Gros de Naples is the name of silk taffeta with a thicker weft, making the fabric look like Gros de Tours, but is slightly thicker and stiffer, perfect for outerwear such as a doublet [7].

The doublet is decorated with an embroidered silk trimming made of 5-end satin cut diagonally. The trimming is decorated with silk embroidery (Figure 5B). The laces are made of flat silk braid (Figure 5D). Additional decorations are strings connecting the slits on the torso and sleeves, loops and expensive thread buttons made of multiple silk threads (Figure 5C). The doublet is lined with a silk taffeta.

The alb is made entirely of silk taffeta. It is trimmed with bobbin lace made of metal thread (Figure 5). The cassock is made of 5-end satin. The upholstery of the coffin is made of a solid cut velvet (Figure 2 C). The fabric is of high quality, with a very high density.

Details of the structure of these fabrics are given in Table 1.



Fig. 6. Alb, made of silk taffeta trimmed with a bobbin lace. Photos by Maria Cybulska

4. Results of costume analysis

The wide cape (royal robe) covering the king's shoulders, flowing freely from the shoulders, worn directly over the dalmatic, is made of several (probably 5-6) lengths of patterned silk, cut and sewn together in the shape of a semicircle. Its edges are trimmed with a gold woven galloon with fringes.

The embroidered dalmatic has a simple cut, and its form resembles the shape of a cross or the letter "T" when unfolded. The front and back parts are made of two semi-rectangular, wide pieces of silk taffeta. The sides along the entire length up to the sleeves are open, not sewn together. The sleeves are made of two trapezoid pieces of fabric that are folded in half, also not sewn. The neckline is wide but shallow, on both sides of which, two thick braided cords are attached,

finished with very large (approx. 35 cm long) decorative tassels made of silk and plied metal wrapped thread on a wooden core. The tassels are finished with long dense fringes (Figure 3).

The dalmatic is trimmed with two types of gold woven bands: a plain galloon made entirely of silver gilt wrapped thread (Figure 3A) at the height of the breast and below the waist, and with a silver gilt patterned galloon (Figure 3 B) at the lower edge.

Underneath the dalmatic, the king is dressed in a long, loose silk robe with straight sleeves. The length of the robe corresponds to an alb. All its edges are trimmed with a narrow bobbin lace made of metal thread (Figure 6).

In addition, in the sarcophagus there was a long robe made of silk satin in the

clothing	Item	Technic	Threads	Raw material	Threads structure: twist [no of twists/cm; diameter [mm]; other characteristics for metal threads: wraps/cm; strip width [mm]	Thread count n/cm	Other
dalmatic	main fabric	taffeta	warp	silk	S; 0,117	70	Figure 3.
			weft	silk	S; 0,205	53	
	embroidery	running stitch		silver gilt on silk core	metal wrapped thread, doubled Z; thread diameter 0,8; single thread: 20 wraps/cm in S; strip width 0,41; silk core: S; 0,39	x	Stitch length ca 13 mm.
	galloon 1	plain weave	warp	silver gilt on silk core	metal wrapped thread, diameter 0,33; 18 wraps/cm in S direction; strip width 0,48	29	Width of the galloon 13 mm (38 warp ends). Figure 3A.
			weft	silver gilt on silk core	metal wrapped thread, diameter 0,33; 18 wraps/cm in S direction; strip width 0,48	4,5	
	galloon 2	rep and basket weaves, patterned	warp	silk	plied 2S; 0,28	56	Width ca 21 mm (with loops and fringes). Figures 2B and 3B.
			main weft	silk	plied S2Z; 0,44	21	
			supplementary patterning weft	silver gilt on silk core	metal wrapped thread, diameter 0.35; 23 wraps/cm in S direction; strip width 0,33	21	
	tassel	braided		silk	S2(S2Z) 0,55 mm	x	Silk and metal thread on a wooden core. Figure 3.
				silver gilt on silk core	metal wrapped thread, diameter 0.29; 19 wraps/cm in S direction; strip width 0,32	x	
			silver gilt on silk core, doubled	doubled Z; single thread: 0,29 m; 19 wraps/cm in S direction; strip width 0,32	x		
cope	main fabric	Gros de Tours, patterned and brocaded	warp	silk	S; 0,15	64	Pattern repeat 17x15 cm. Selvedge 8,7 mm wide in rep. 52 warp ends: 12 green (g), 6 yellow (y), 10 g, 6 y, 6 g, 6 y, 6 g. Edge warp end – flax plied yarn. Figures 2A and 4.
			main weft	silk	Z; 0,18	44	
			supplementary patterning weft	silver gilt	flat metal thread, width 0,15	22	
			supplementary brocading weft - metal thread together with a fine silk thread.	silver gilt on silk core	metal wrapped thread, 22 wraps/cm in S direction; thread diameter 0,46; strip width 0,35; silk core: S, diameter 0,46	22	
				silk	S; 0,07		

Table 1. Results of analysis of textiles

doublet	main fabric	Gros de Naples brocaded	warp	silk	Z2Z; 0,25	69	Pattern repeat 8,5x10 cm. Figure 5.
			main weft	silk	Doubled Z; 0,47	17	
			supplementary brocading weft	silk	S2Z; 0,67	17	
	lining	taffeta	warp	silk	S; 0,15	70	
			weft	silk	low twist; 0,15	50	
vams laces	flat braid		silk	S3Z ; 0,69	18	Width 9,5-10 mm. Figure 5D.	
doublet trimming	background	satin 4/1 (2)	warp	silk	0,15	92	Figure 5. Detail in Figure 5B.
			weft	silk	0,22	42	
	embroidery	couching	laid thread 1	silk	plied thread: Z2(S2S); 0,62		
			laid thread 2	silk	wrapped thread: doubled core (S; 0,49) wrapped in Z direction with doubled thread (S; 0,21); 18 wraps/cm; total thickness 0,71		
			coaching thread	silk	doubled S2S; 0,26		
half cross stitch		silk	doubled S2S; 0,35				
alb	main fabric	taffeta	warp	silk	doubled S; 0,17	63	Figure 6.
			weft	silk	doubled S; 0,21	46	
	trimming	bobbin lace	x	silver gilt	metal wrapped thread: thread diameter 0,48; 16 wraps/cm in S direction; strip width 0,49		Width 20 mm. Figure 6.
Cassock	fabric	5 ends satin	warp	silk	S; 0,08	115	
			weft	silk	no visible twist; 0,21	46	
coffin upholstery	fabric	solid velvet	main warp	silk	S; 0,1	96	Grooved rod every 3 weft picks. Ground weave irregular broken twill. Figure 2C .
			pile warp	silk	S2; 0,17	32	
			weft	silk	very low Z; 0,17	51	

Continued Table 1. Results of analysis of textiles

form of a cassock, probably reaching the ankles, fitted through the torso and flaring out below the waist. At the front along the entire length, the clothing is cut and fastened with numerous small haberdashery buttons, which reach up to the bottom edge of the robe, made of silk threads decoratively braided, accompanied by decorative button holes.

A short jacket was also found in the royal sarcophagus, which the king had worn under the cassock, called a doublet,

fitted to the body, cut in the front over the entire length and fastened with twenty fine haberdashery buttons made of silk braided on a wooden core (Figure 5).

The long sleeves are fastened with buttons. Attachments at the shoulder are covered by decorative wings sewn from three rectangular tabs connected with silk strings (Figure 5. at the top).

The doublet skirt reaches the hips and is sewn from fabric tailored in the shape of

a trapezoid, just like on the doublet in the portrait of the king presented in Figure 7.

The doublet is decorated along all cuts and edges with the trimming ca 13 mm wide, made of a strip of silk satin embroidered with flower motifs in the same colour as the main fabric. It is lined with silk taffeta.

In addition to the clothes discussed above, in the royal sarcophagus there was a hat, gloves, stockings and shoes.



Fig. 7. Portrait of King Sigismund III Vasa (1566-1632) by unknown painter, circa 1620, Museum of Zamość¹

The hat is sewn from solid silk velvet with a cut pile, and from four wedges with rounded edges in the upper part, lined with silk satin.

The gloves are knitted from silk and metal wrapped thread in a stocking stitch. On the back of each there is the Christogram IHS, surrounded by a circle of rays. The wrists are finished with elaborate tassels made of silk and metal thread, in a form resembling the cross and with a border decorated with four rows of knitted geometrical motifs (Figure 1, at the bottom, on the right).

On the king's legs are long, reaching the knees, silk knitted stockings, kept under the knees thanks to silk garters.

A pair of silk shoes on a flat leather sole and low heels, tied with silk ribbons, were also found in the sarcophagus. They were

decorated at the toes with appliqué in the form of a cross made of a narrow band woven from metal thread, as presented in Figure 8.

5. Discussion

King Sigismund III Vasa died on April 30, 1632 at the castle in Warsaw. Immediately after his death, his body was washed, an autopsy and balsamation treatments carried out, and then the body was prepared for display on a catafalque in a specially decorated chamber. The king was dressed in the robes, which, according to sources, are referred to as coronation robes, he had worn on the day of his coronation. The solemn funeral took place on February 4, 1633, when his body was laid to rest in the crypt of the Wawel cathedral in Krakow [1].

According to the funeral accounts, the king was dressed for burial in coronation robes which resembled or were rather reminiscent of liturgical, pontifical episcopal robes. Such a coronation outfit "emphasized the sacred character of the ruler in accordance with the concept of "Rex et Sacerdos" recorded in Ordo Coronandia [9]. The king's coronation had legal and symbolic significance; it was also a liturgical act [10]. A similar meaning can be attributed to the royal funeral ceremonies.

Based on the research of the sarcophagus content, it was found that during preparations for the funeral ceremonies, the king's body was dressed successively in a: doublet, a long cassock fastened with small buttons, a loose robe resembling an alb, a dalmatic, and an outer robe - the cope. He had gloves on his hands, as well as long silk stockings and shoes on his feet. The head was decorated with a velvet hat, on which the crown was originally put, removed from the sarcophagus along with the sceptre in 1785 [1].

Albrycht S. Radziwiłł, who was an eyewitness to the event, wrote in his diary about Zygmunt III Vasa's funerary robes. According to him, after preparing the body, "then it was dressed in royal robes. A white silk cope interwoven (embroidered) with golden threads, a white dalmatic, gloves and boots like those of an episcopal, with gold, on the head the crown brought from Moscow, of a great value and weight, in the hands the royal insignia made of gold. The body was dressed by the clergy and the Grand Secretary of the Crown Szyszkowski, referendaries: of the Crown - Lipski and Lithuania - Tryzna." (translated by the authors) [10].

Only four robes were described in the diary: a dalmatic, cope, gloves and shoes. The alb, cassock and headgear were not mentioned. This description can be supplemented by a painting by court painter Christian Melich, showing the king's body lying on the catafalque (Figure 8, on the right). In the picture, the elements of clothing mentioned by the diarist are visible; there is also a long robe, which can be described as an



Fig. 8. On the left: Pieter Soutman, *Portrait of Sigismund III Vasa in coronation robes*, painted circa 1624, Staatsgalerie Neuburg², On the right: Christian Melich, *Sigismund III Vasa on catafalque*, 1633, dep. Wawel Castle³

alb and under the crown one can see the edge of the red hat. King Sigismund III Vasa is wearing very similar clothes in the coronation portrait by Pieter Soutman from 1624 (Figure 8 on the left).

Exploring the burial of Sigismund III Vasa created the opportunity to compare and check the reliability and truthfulness of the accounts of memoirists and painters. Research confirmed the existence of the clothes mentioned by Radziwiłł [10]. It is also confirmed that the king was wearing a long robe, an alb, made of silk taffeta, trimmed with gold lace, visible in the painting by Melich, who, as a court painter, painted the king on the catafalque, most likely, as Radziwiłł's account makes credible, on his own observations. This is evidenced by the presentation of the trimmings of the dalmatic and alb. In Soutman's painting, the bottom and sleeves of the dalmatic are trimmed with lace and the bottom of the alb with a woven galloon, while in Melich's painting the bottom of the dalmatic is trimmed with a gold galloon

and the alb with lace, as it actually took place.

Also noteworthy is the cassock, the presence of which in the king's sarcophagus was a big surprise because it does not belong to the accepted set of coronation robes. It is worn by clergy, but it is not a liturgical vestment, but everyday clothing.

The presence of the doublet, which was a court costume, was also surprising. However, such clothing also appears in accounts relating to the burial of King Sigismund Augustus [11].

The shirt did not survive, it had probably degraded. No trousers were observed in the sarcophagus, but it is not certain that they were not there. The reason for this may be that the clothes were analysed in situ in the crypt, where there were no conditions for detailed examination that had to be carried out in a very short time, when the king's remains were transferred to a replacement coffin. In

such a situation, in a tangle of heavily soiled and discoloured clothes that were very wrinkled and impossible to unfold, one could be sure that the trousers were not hidden somewhere.

It turned out that King Sigismund III Vasa was buried in a cope made of a different fabric than that depicted in the king's coronation portrait and in the painting showing the king on a catafalque. The cope in the paintings is made of 16th-century silk with a large, symmetrical pattern, possibly embroidered. It is trimmed with a gold galloon and lined with red fabric. The cope in which the king was buried is made of Italian silk from 1620-40, with a pattern of small asymmetrical plant motifs.

This marriage of court, secular and coronation robes derived from liturgical vestments seems interesting. This combination of royal grave robes seems symbolic: the visible coronation robes worn on top are the sacred space, and the court clothes hidden beneath them are the profane space. What is also particularly important is the connection through clothing of two unique events - the king's coronation and his death and funeral, where during both events the bishop put the robes on the king.

Royal burials are very rarely studied, but as the presented analysis show, they can constitute an extremely valuable source of knowledge and the basis for comparative analysis and assessment of written and iconographic sources.

¹<https://www.zamosciopedia.pl/media/k2/galleries/4022/portr%20szwedz1d1813--male-clothing-male-portraits.jpg>

²https://en.m.wikipedia.org/wiki/File:Soutman_Sigismund_III_Vasa_in_coronation_robes.jpg

³https://pl.wikipedia.org/wiki/Plik:Melich_Sigismund_III_Vasa_on_catafalque.jpg

References

1. Kolendo-Korczak K. and Trzos A. Sarkofagi metalowe w Grobach Królewskich na Wawelu. Historia, wymowa ideowa, konserwacja i restauracja. Akademia Sztuk Pięknych w Katowicach, Zamek Królewski na Wawelu (in Polish), Warszawa- Kraków, 2022.
2. Vocabulary of Technical Terms Fabrics, English-French-Italian-Spanish, CIETA, Lyon, France, 2006.
3. Turnau I. Moda i technika włókiennicza w Europie od XVI-XVIII wieku (in Polish). Ossolineum, Wrocław, Poland, 1984
4. Cybulska M. Beautiful Sadness. Textiles From The Crypts. In: Drązkowska A. editor. Burial crypts of St Francis of Assisi church in Cracow In the light of interdisciplinary studies. Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika, Toruń, Poland, 2021, 148-159
5. Taszycka M. Włoskie jedwabne tkaniny odzieżowe w Polsce w pierwszej połowie XVII wieku (in Polish), Ossolineum, Wrocław, Poland, 1971
6. Bonito Fanelli R. Five Centuries of Italian Textiles 1300-1800. A Selection from the Museo del Tessuto Prato. Cassa di Risparmi e Depositi di Prato, Italy, 1981
7. Hardouin-Fugier E, Berthod B and Chavent-Fusaro M. Les Etoffes, Dictionnaire historique. Editions de l'Amateur, Paris, France, 1994.
8. Borkowska U. Ceremoniał pogrzebowy królów polskich w XIV-XVIII wieku. In: Skarbek J. editor. Państwo, Kościół, Niepodległość (in Polish). KUL, Lublin, Poland, 1986, 133 –160
9. Palecki W. Potrydencka liturgia koronacyjna króla i królowej według Pontificiale Romanum z 1595-1596 roku (in Polish). Roczniki Teologiczne, 2007 Tom LIV, zeszyt 8, 231-255
10. Radziwiłł A.S. Pamiętnik o dziejach w Polsce, tłum. i opr. A. Przyboś, R. Żelewski, t. 1: 1632–1636 (in Polish). Państwowy Instytut Wydawniczy, Warszawa, Poland, 1980, 112–113.
11. Molenda M. Splendide vestitus. O znaczeniu ubiorów na królewskim dworze Jagiellonów w latach 1447 –1572 (in Polish). Towarzystwo Naukowe Societas Vistulana, Kraków, Poland, 2012.