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## Luxurious Merovingian Textiles Excavated from Burials in the Saint Denis Basilica, France in the 6<sup>th</sup>-7<sup>th</sup> Century

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In the north of Paris, in what is now the outskirts of the city, stands the Basilica of Saint Denis. The early church of late Antiquity had been enlarged in several stages, in particular during the 6<sup>th</sup> c. in conjunction with the ascent of the Merovingian dynasty whose rulers began to use it as burial site for the royal family.

The Basilica of Saint Denis had been excavated in several campaigns between 1953 and 1980, first by Edouard Salin, then by Michel Fleury. Full blocs of materials excavated by Fleury were brought to the archaeological laboratory in Nancy where Albert France-Lanord examined them. Besides various articles published in the 1960s and 70s, a large monograph came out in 1998 under Fleury and France-Lanord's direction.<sup>1</sup> The Nancy laboratory specialized in the study of metallic material, and so the book presents Merovingian jewelry in great depth but does not give the textile finds the attention they deserve. The exception was some focus on the gold threads present in brocaded bands and embroideries which were reconstructed according to radiographs taken during the study, and to the physical aspect of the gold threads (though no metal analyses were undertaken at that time).

The Saint-Denis excavations had resulted in an outstanding discovery: the identification of Queen Aregonde's grave, thanks to a gold ring bearing the inscription "*Arnegundis regine*". Aregonde was king Clotaire I's wife (511/561), and Chilperic's mother (537-539/584), and she died in 580-581 AD. Her high rank in the Merovingian hierarchy, as the wife of a king, and the mother of another, she rightfully deserved to be buried in luxurious attire. Her jewelry is testament to her status, with a long silver-gilt dress pin, a large belt buckle and garter fittings, among others found in the burial. Based mainly on these elements, her garments had been reconstructed,<sup>2</sup> hypothesized as with a short knee-length dress. This reconstruction had been heavily criticized by scholars at the time, but it is only after the textile finds could be analyzed again with accurate information about their position in the grave that the early hypothesis could be revised.

And this was made possible only after the archaeological material had been re-discovered in a Parisian archaeological storage facility in 2003. Patrick Périn then set up a new multidisciplinary project at the Musée d'Archéologie Nationale in Saint-Germain-en-Laye in 2006. Its goal is to complement and complete the early publications with new research now possible through the development of new analytical techniques.

At present, the main results drawn from Queen Aregonde's organic remains concern the estimate of her age at death which increased from 45 years old to  $61 \pm 3$  years by enamel dental analysis; and, through an assessment of a deformation to her right foot and traces of stress in her teeth, it was discovered that she probably had polio during her childhood.<sup>3</sup> Another important part of the project, which helps to understand the luxury of the Merovingian court, has been the analysis of the garnets inserted in the jewelry. Thomas Calligaro, research scientist at the Centre de Recherche et de

<sup>1</sup> Fleury and France-Lanord 1998 (the book had been written a long time before it was printed)

<sup>2</sup> Fleury and France-Lanord 1979 and 1982.

<sup>3</sup> Périn and Calligaro 2005

Restauration des Musées de France (Paris), has been able to identify five different proveniences for these stones, indicating that they had been imported not only from Portugal and Bohemia, but also from two sites in India, and one in Sri Lanka.<sup>4</sup>

An important part of the project deals with the textiles. Antoinette Rast-Eicher, from Archéotex (Switzerland), has examined and documented all the single fragments that resisted deterioration not only to the centuries, but also to their previous analysis and careless conservation, as can be understood by comparing the cuff of Aregonde's coat sleeve as recovered from her grave to its present remains: small fragments today glued onto a rough board. Antoinette Rast-Eicher has also identified the fibers and the structures of the textiles, and looked for comparable reference materials enabling the linen and wool fragments, and the gold threads, to be placed into their production context, while Sophie Desrosiers was doing the same with the silks. Witold Nowik, chemist from the Laboratoire de Recherche des Monuments Historiques (Champs-sur-Marne), has analyzed the dyes. In the case of Queen Aregonde's garments, Antoinette Rast-Eicher has developed a detective inquiry in order to find all the details that could help to reconstruct them. Several small layers of artifacts on the bones or objects were definitive clues. But not every detail could be revealed solely by working on the textile remains, as very little from the documentation from the original excavations nor France-Lanord's analyses have been found so far. Nevertheless, the reconstruction presented at the end of this paper will give an idea of the original splendor of the textiles found in the queen's grave. Before arriving at the reconstruction, we will present the best examples of the darkened and small deteriorated textile and gold thread fragments recovered from the twenty-nine re-analyzed sarcophagi recovered from the original excavation.

As a general observation, we can say that, whatever the materials – linen/hemp, wool, silk, gold -, the fibers and textiles are of a very high quality. Two exceptional fibers have been found that were said to be very expensive by that time: “beaver” probably spun with fine wool in a very deteriorated fragment of an upper textile layer from Aregonde's grave, and a fragment of “otter” skin, probably used to make a purse found in grave 41 (originally published as fox).<sup>5</sup>

According to Thomas Calligaro's analyses, the metal used for the gold lamellas contains various percentages of silver and copper, and, also some traces of tin and cadmium regularly used in the making of jewelry. This indicates that the likely source of the metal had come from melting down of jewelry. In addition, the regular traces all of them carry on both faces attest a single method of production that must be considered therefore as a local one.

The wool and linen textiles are local productions: tabbies, 2/2 twill and diamond twill correspond to local productions anchored in the Germanic tradition of the time. Typical Roman types are missing, such as weft-faced tabby, half-basket-weave and tapestry. Instead, we found very fine pleated woolen tabbies with slightly overspun “z” warps and wefts (grave 48). The large fragment showing a dark blue dye made with five millimeters high pleats (figure 1a), probably belonged to a tunic similar to those represented on a late antique gravestone from Bosnia-Herzegovina.<sup>6</sup> There were also spin-patterned linens with striped or checkered effect obtained through the regular change of spin-direction of a limited number of warps and/or wefts (as seen in the “grande robe” in Chelles)<sup>7</sup>, and many very fine woolen tablet woven bands produced with different techniques (figure 1b). All these textile types were well known in Germany, east Switzerland and northern/eastern France in the 6<sup>th</sup>

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<sup>4</sup> Calligaro *et al.* 2008

<sup>5</sup> Fleury and France-Lanord 1998 : I-172

<sup>6</sup> Rast-Eicher 2002 ; Rast-Eicher 2008 : 53.

<sup>7</sup> Laporte 1988 : 92-97 ; Laporte et Boyer 1991 : 46-47 ; Rast-Eicher 2008 : 53.

and 7<sup>th</sup> century.<sup>8</sup> Tablet weaving has been known in Central Europe since the Bronze Age and was a major decoration during the pre-Roman Iron Age.<sup>9</sup>



*Figure 1a, left. Dark blue pleated woolen tabby. (Grave 48)*  
*Figure 1b, right. Fine woolen tablet woven band with brocaded wefts. (Grave 41)*  
*All the photos of the textiles in the article are from Antoinette Rast-Eicher.*

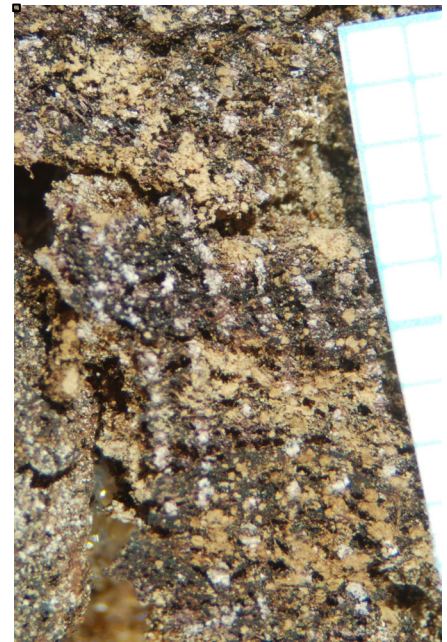
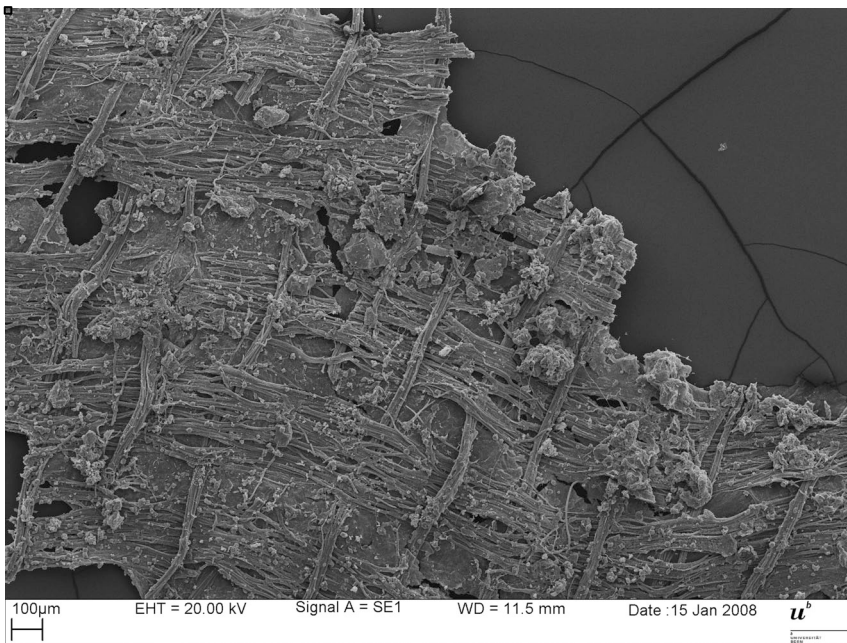
The silks are either plain or figured. Two very small fragments of light taffetas have been found in graves 13 and 50. They are so fine that it was a miracle to see them (it is probable that they were originally much more numerous). The second one, woven with grège silk,<sup>10</sup> shows high thread counts - 65 and 60 threads per centimeter -, two characteristics pointing to a Chinese weaving tradition<sup>11</sup>. The first one is slightly different with a light “z” twist in the warp and relatively low thread counts - 45 warps and 24 wefts per centimeter -, has probably been woven somewhere else (figure 2a). Another tabby example, weft-faced, with 18 warps and more than 90 wefts per centimeter -, shows a thick rectilinear warp of very deteriorated (undetermined) fiber, probably a plant fiber, and a fine silk weft dyed with true shellfish purple (figure 2b). It composed Aregonde’s coat. This is the only example that matches the Roman taste, but here in silk rather than wool. In the queen’s grave, silk dyed with madder was also found as supplementary triple weft for a large tablet-woven band decorated with diamonds, and more silk threads were used for the embroidery of her leather belt, showing that silk threads were available locally for small decorations.

<sup>8</sup> Rast-Eicher 2002.

<sup>9</sup> Grömer 20

<sup>10</sup> Grege silk is the thread obtained from reeling the cocoons. It has gum and no twist.

<sup>11</sup> Chinese taffetas have usually been woven with grège. They have no twist in warp and weft. Riboud and Vial 1970 : xxv-xxvi ; Wu Min 2006 : 211 and note 2.



**Figure 2a, left. Silk tabby woven with grège weft whose filaments, after degumming, spread into the available space, and light z twisted warp. (Grave 13) (SEM photo)**  
**Figure 2b, right. Weft-faced tabby with shellfish dyed silk wefts. (Grave 49)**

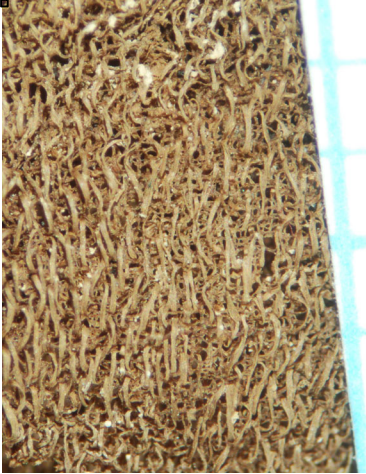
Finally, eight fragments of more complex silks have been identified. Their reduced dimensions and bad state of preservation does not allow more comparison than through their technical features. Happily, during the 6<sup>th</sup> and 7<sup>th</sup> centuries, samites and other types of figured silks from different areas - Mediterranean, Persian, and Chinese - showed differences in thread construction, warp proportions, direction of twill and reduction that allow the evaluation of their region of production.<sup>12</sup> They are all bound in 2.1 twill and, at an early stage of the research, were all considered as samite. But one piece with grège threads and very high thread counts – 115 and 50 threads per centimeter in the two directions – is now considered as woven with a different technique (grave 38)(figure 3a). Its untwisted threads point to a Chinese tradition and its high thread counts seem more acceptable for a simple twill or a monochrome figured twill with the highest thread count in the warp direction<sup>13</sup>. Another fragment of a probable samite, too deteriorated, show only the S direction of its twill and cannot be identified further (grave 47). With their “z” twisted warps, the six other fragments have been woven outside of China and, according to the 1/1 or 2/1 proportion between their main and binding warps, in two different areas.

With a 1/1 warp proportion, four fragments have been probably woven in the Mediterranean region. The S direction of their twill, and the dyes used for two of them, fit with such a region of production : shellfish purple and some madder in one case (Aregonde’s grave; figure 3b), kermes, madder and a plant with indigo in the other one (grave 63)<sup>14</sup>. In the queen’s grave, in another female grave (42), and in grave 47 with the deteriorated example, the samites had probably been used as veils.

<sup>12</sup> Desrosiers 2004 : 184.

<sup>13</sup> For the grège threads, see above note 11. Even if the textiles have shrunk while drying in the graves, Chinese warp-faced twill with multiple warps and samites (the same turned 90°) reach usually half these thread counts. For monochrome figured 2.1 twill, see Xu Zheng 2007.

<sup>14</sup> As the threads are impossible to separate, it has not been possible to identify the dyes used for the warps from those used for the wefts.



*Figure 3a, left. Simple or monochrome figured 2.1 twill, probably woven within a Chinese tradition. (Grave 38)*

*Figure 3b, right. Samite with 1/1 warp proportion used as a veil by queen Aregonde.*

Two samites with a 2/1 warp proportion and a glossy appearance can be considered as imports from the Persian region. The example with three identifiable wefts - red, blue, and what might have been a yellow – is bound in a 2.1 twill with a diagonal in S direction (figure 4a). It has a warp dyed with madder, the other dye products could not be identified as only indigotine resulted from the analysis. The samite was decorated with a gold border and situated close to the neck of the adult possible female in grave 41. The second one, forming the cuff of Aregonde's purple coat sleeve, revealed only the presence of madder, maybe for the warp threads as the wefts show a dark bluish reflection (figure 4b). The direction of the diagonal of its 2.1 twill is Z, then in the opposite direction to the other 2/1 samite, a distinction that does not seem to characterize a definite group in that area as far as we know.



*Figure 4. Samite with a 2/1 warp proportion. 4a, (left). With three identifiable wefts and a diagonal in "S" direction (grave 41). 4b, (right). With a diagonal in "Z" direction : cuff of queen Aregonde's purple coat sleeve. (Grave 49)*

After having examine all these small, dry and dark fragments, it is time to consider Antoinette Rast-Eicher's new proposal for Aregonde's funeral attire with a more sensible touch given by the materiality of the textiles she was wearing when she has been buried (figure 5).

□



***Figure 5. New proposal for the reconstruction of queen Aregonde's funeral attire (grave 49 in Saint Denis Basilica) © Florent Vincent, after Antoinette Rast, Marquita Volken, Sophie Desrosiers and Patrick Périn's documentation.***

Queen Aregonde's long garment had been cut in a weft-faced half-silk tabby whose silk weft had been dyed with shellfish purple. At the waist, it was held by a leather belt embroidered with silk and closed by an important gold and silver buckle with garnets. Its front opening was decorated with a silk tablet-woven band showing a diamond design made with a red supplementary weft dyed with madder. The cuffs of the purple garment sleeves were made of a blue and yellow (?) silk samite imported from Persia. And above these cuffs were bands gold-embroidered with rosettes in a series of circles.

On her head and shoulders, secured by gold pins, she was wearing a veil in a red and yellow figured samite imported from the eastern Mediterranean region, dyed also with purple, and some madder. She wore gold earrings with filigree, and, above the veil or another fabric, an additional decoration, probably a tablet woven border brocaded with gold threads.

Under the coat, the queen was wearing a garment made of two different tabbies: one in wool, and the other maybe in linen – possibly a shirt ? or part of the purple garment lining ? On her legs, she had silver garter fittings closed around her shoes made of decorated goat leather.

Not included in the visual reconstruction of figure 4, but more visible because above the long purple garment and under a linen shroud covering her body, was the “tissu pelucheux”<sup>15</sup> (shaggy textile) – a coat or a cape ? - woven with threads spun from a mixture of very fine wool and beaver hair, an expensive fabric reported as “*vestis*” and not “*pellis*” by Ambrosius of Milan, Claudianus and later Isidor of Sevilla.<sup>16</sup> According to Claudianus, this garment of beaver hair was a “*birrus*”, a coat.<sup>17</sup> The price Claudianus gives for this “*birrus castoreus*” - 6 *solidi* – is, according to Cassianus, a contemporary of Claudianus, enough to pay a whole year in luxury for two people !<sup>18</sup>

The quality of the prime material – fine wool, silk, gold, beaver hair – allied with the brilliant colors obtained from such dyes as shellfish purple, madder and indigo plants, and the long distance imported textiles probably bearing exotic unusual designs, sometimes on a brilliant surface, converge to communicate the expression of a royal court well aware of luxurious textiles.

### Acknowledgments

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<sup>15</sup> As described by Fleury and France-Lanord 1998 : I-156.

<sup>16</sup> Ambrosius of Milan, *De dign.sacerdot.* 4 ; Claudianus, *Carm.* Min. 10 ; Isidor of Sevilla, *Ethym.* XIX, 12 (1-20). Isidor uses the Germanic word « *fiber* » (« *Biber* » in German), while Ambrosius and Claudianus wrote the latin « *castor* »

<sup>17</sup> This is very probable as the textile was found as one of the top layers and described by the excavators as filling the gaps between the sarcophagus and the body.

<sup>18</sup> Johannes Cassianus, Coll. 9.5.5.



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