

JERZY MAIK

## THE SHROUD OF TURIN AS A HISTORICAL TEXTILE

The Shroud of Turin is commonly considered the sheet in which the body of Christ was wrapped and therefore is regarded as one of the holiest relics by the Christians. It has become a subject of scientific, sometimes very sophisticated, investigations in recent years, which are supposed to date the burial garment and confirm or negate its holiness. It seems, however, that the shroud researchers have forgotten that before the sheet was used, it had simply been a piece of cloth woven on a loom. In the famous book by I. Wilson<sup>1</sup> the garment treated as a textile artifact is shown in 3 photographs. There is a fuller caption only underneath the first one, where the shroud is described as a textile made with a 3/1 herringbone twill weave. No similar textiles dating from ancient times have been found so far. This weaving technique, however, must have been known in the Roman period, as evidenced by some textile finds, such as a fabric dated at about 250 A.D. found in a child's grave in Holborough (Kent, England) and two other relics of the same period from Palmyra, Syria. According to the British textile specialist Elisabeth Crowfoot, the technique used to make the piece of cloth suggests its Syrian origin. A. Marion and A.-L. Courage devote a major section to a discussion of the textile examination results in their recently published book summarizing the latest studies of the shroud. The authors quote the examinations carried out by several researchers (G. Vial, W. Dickinson, R. Rogers), but the description of the technique used to weave the shroud provides little more information than the above-cited book by I. Wilson. The most important pieces of information are the density of threads (40 threads per 1 cm of the warp or maybe the weft) and the presence of micro-traces of cotton, suggesting that the loom on which the cloth was woven had been used for weaving cotton fabrics before. The above researchers are quoted in the book as saying that

the technique used to weave the shroud was very unusual. They also mention very few and vague analogues and are of the opinion that no closer analogues have been found so far<sup>2</sup>.

The section of the book discussed here contains a few statements which seem incorrect to me. For example: very few textiles dating from the first centuries of our age have survived up to modern times (p. 70), a fabric which is not ornamented is of no use to textile researchers and this is why many unknown textiles of this kind may be still kept in some museums (p. 73), cotton cloth was produced in Europe only from the seventeenth century onward, excepting Moresque Spain and Italy, where it was woven as early as the Middle Ages (p. 74). Those examples seem to suggest that the authors are not familiar with the rich literature on archaeological textiles. What is more, the textile terminology used in the book is inexact. Of course the last accusation may be refuted and the shortcomings treated as the translator's mistakes, but even then the above-discussed section of A. Marion and A.-L. Courage's book, devoted to the weaving technique used to make the Shroud of Turin, does not satisfy a textile historian.

First of all, an explanation should be given of the expression "3/1 herringbone twill weave". The twill weave of a textile is one where the threads crossing one another on its surface are woven into a pattern of slanting rows. If the rows bend in a regular order alongside the warp or alongside the weft, the cloth is a fabric made in herringbone weave bending in the warp or the weft. If the rows bend in both the warp and the weft, the cloth is made in a diamond weave. The term "under three over one", which is usually expressed as the fraction 3/1, means that in the smallest repeated part of a weave, the so-called repeat, there are three warp threads and one weft thread.

<sup>1</sup> I. Wilson, *The Shroud of Turin. The Burial Cloth of Jesus Christ?*, New York 1978, Polish edition: I. Wilson, *Całun Turyński*, Warsaw 1983, first edition, figs. 29-30 and the caption underneath fig. 29.

<sup>2</sup> A. Marion and A.-L. Courage, *Nouvelles découvertes sur le suaire de Turin*, Paris 1997, Polish edition; A. Marion and A.-L. Courage, *Całun Turyński. Nowe odkrycia nauki*, Kraków 2000.

Such a weave can be made on a specially prepared loom equipped with 4 harnesses (the movable parts of a loom to which the warp threads are tied) or 3 harnesses and a stationary separating lath. The latter technique was used in primitive looms.

Twill weaves made on a loom equipped with 3 harnesses and a stationary separating lath can be found in archaeological textiles from Central Europe. The earliest finds date back to the beginning of the Iron Age and it is known that such fabrics were in widespread use in the Roman period. However, the pieces of cloth discovered so far are made with a 2/2 weave (the repeat is under two over two). Fabrics of this type are much more popular in Barbaric Europe than in the northern provinces of the Empire<sup>3</sup>.

I. Wilson quotes analogues from Holborough and Palmyra. Both the fabrics are silk damask textiles, so-called patterned textiles, where the pattern is made by changing the weave: the weave of the pattern is the background weave reversed. The 3/1 twill weave used in those textiles differs from the one used in the shroud. The fabrics mentioned by I. Wilson are made in a 3/1 cross weave or a 1/3 cross weave<sup>4</sup>.

Thus the above textiles cannot be considered very close analogues of the shroud. The weaves used and the very looks of the fabrics are different. A few other ancient textiles made on four-harness looms and found in the Near East, namely in Palmyra, Antinoë, Mons Claudianus and Masada, can also be regarded as analogues of the burial garment from Turin<sup>5</sup>. They are all woolen fabrics made with 2/2 twill or 2/2 diamond twill weaves and high quality products, as evidenced by, among other things, a high density of threads (up to 160 threads per 1 cm). However, the analogies observed here are not closer than the ones discovered in the case of the fabrics discussed above. Besides, the majority

<sup>3</sup> L. Bender Jørgensen, *North European Textiles Until AD 1000*, Aarhus 1992, pp. 120-136; J.-P. Wild, *Textile Manufacture in the Northern Roman Provinces*, Cambridge 1970, pp. 47-50.

<sup>4</sup> J.-P. Wild, *Textile Manufacture...*, pp. 51-52, 101 figs. 41, 42.

<sup>5</sup> R. Pfister, *Textiles de Palmyre*, Paris 1934, p. 35; by the same author, *Nouveaux textiles de Palmyre*, Paris 1937, p. 24; M. Hoffmann, *The Warp-Weighted Loom*, Oslo-Bergen-Tromsø 1974, pp. 250-252; L. Bender Jørgensen, *Textiles from Mons Claudianus: A Preliminary Report*, "Acta Borealia", vol. 3, 1991, pp. 83-95; A. Scheffer, H. Granger-Taylor, *Textiles from Masada. A Preliminary Selection*, [in:] *Masada IV. The Yigael Yadin Excavations 1963-1965*, Jerusalem 1994, pp. 206-212.

of archaeological textile researchers are apt to regard them as North-European artifacts. But they are generally identified as coming from a northern Roman province rather than the *barbaricum*<sup>6</sup>.

I would also like to quote two analogues which resemble the shroud from the technological point of view but date back to the Middle Ages. These are textiles found during recent excavations in Elbląg<sup>7</sup> and Wrocław<sup>8</sup>, Poland. The textile from Elbląg is a woolen one dated at the end of the fifteenth century and the piece of cloth discovered in Wrocław is made from hemp and has been dated at the period between the thirteenth and the fifteenth centuries. They both are made in a herringbone weave, which is identical to the one used in the shroud. The quality of the fabric from Elbląg suggests its local origin. Unfortunately, I have failed to successfully trace the origin of the second textile.

Do the above-quoted analogues allow the researcher to assume that the shroud is a medieval artifact and has nothing to do with Christ's burial garment? I would hesitate to draw such a conclusion. It must be noted that all the analogues are fairly random and therefore cannot form a solid basis for deduction.

In my opinion, the shroud should be, above all, carefully examined in respect of the technologies applied. Such analyses ought to include not only the weave but also the structure of the textile, as the latter might be different despite all the superficial similarities. Moreover, the structure should be compared with the structure of other ancient and medieval textiles coming from the Mediterranean region. First, one should identify the following characteristics: the density of threads, the take-up (that is, calculate the percentage of shortening the length of the threads, being a result of the thread sag), the percentage of the relative cover (that is to say, find out what parts of the textile are taken up by the threads and spaces between them) and compare them with the corresponding characteristics of other specimens. Further research needs must be specified by textile experts.

Structural analyses of textiles are made, for example, at the textile department of Łódź Technical University, whose staff have at their disposal the necessary modern laboratory and computer equipment. The main advantage of such examinations is

<sup>6</sup> M. Hoffmann, *The Warp-Weighted Loom*, Oslo-Bergen-Tromsø 1974, pp. 250-252.

<sup>7</sup> J. Maik, *Sukiennictwo elbląskie w średniowieczu (The Cloth Industry of Elbląg in the Middle Ages)*, Łódź 1997, pp. 16-17, fig. 4e.

<sup>8</sup> The author's unpublished research.

that they do not damage, even to a small degree, the object examined<sup>9</sup>.

If the shroud is to be treated as a historical textile, the Shroud of Turin research programme tentatively outlined above probably will turn out to be

indispensable. But assuming that the shroud is considered a relic, its authenticity must remain a matter of faith.

*Translated by Zuzanna Poklewska-Parra*

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<sup>9</sup> J. Masajtis, *Analiza strukturalna tkanin (Structural Analysis of Textiles)*, Łódź 1999.

