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The Shroud of Turin and its radiodating

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We pointed out on other occasions that as archaeologists and historians, we are unable to indicate any object, in any museum or church which, from a scientific point of view, is comparable to the Shroud of Turin.

We know that radio dating carried out in 1988, which placed the origin of the Shroud in the Middle Ages between 1260 and 1390 – is not consistent with the chemical, physical, historical and archeological data resulting from this famous object.

The Shroud of Turin carries with it a centuries old dramatic history. **IT WAS MANIPULATED MANY TIMES FOR MENDING AND RESTORATION WORKS.**

- Lately, a few small, marginal interventions were made by the Sisters of St. Joseph in Turin.
- In the previous century, much more complex works, e.g. mending and others, were done by princess Clotilde di Savoia-Bonaparte.
- Earlier, works were carried out meticulously, albeit roughly, by the Blessed Sebastiano Valfrè.
- In 1536, after the fire in Chambéry, extended restoration work was carried out, such as patching and “heavy mending”. The Shroud was **COMPLETELY** covered with a Holland cloth of equal size. The latter adheres to the Shroud by countless stitches passing through the two fabrics, "which are perfectly masked by the Shroud's threads", as a witness says.

Restoration works on the Shroud

1973: mending by the sisters of St. Joseph, Turin
1858: mending and lining by princess Giulia Savoia Bonaparte
1694: various restoration works by Ven. Sebastiano Valfrè
1534: patching, fixing, covering by Poor Clares of Chambéry
13.? Fire and repair works
941/1204: cuttings for relics and restoration works - Constantinople
II/IX cent.: various vicissitudes like escapes, sieges - Jerusalem, Pella, Edessa

It seems that the only untreated part of the Shroud was the one bearing the facial imprint.

- Before this mending, the Shroud went through many twists and turns over the centuries, i.a. a fire, followed by repair work, in the mid-14th century; and another fire which occurred in Constantinople around the eleventh century, when the Shroud was exposed folded, judging from the geometric position of the small burns.

Mending and restoration points observed on the Shroud

tacking hemming

 stringing
whipping mending

 invisible mending

The quantity and variety of mending stitches observed on the Shroud from the Middle Ages to date, from Edessa to Constantinople, Lirey, Chambery and Turin, is impressive: tacking, hemming, whipping, stringing and mending stitches, and many others.

Add to this an amount of parts, invisible to the naked eye, which were reinforced and maybe remade with the invisible mending technique. The Shroud's Mediterranean cloth, because of its very ancient handcrafted structure, the significant caliber and the thick weaving perfectly absorbs an intervention of this kind.

In 1978 Mottern, London and Morris performed in Turin radiographic examinations on the region of the Shroud where, ten years afterwards, the sample for Carbon-14 dating would be taken. What emerged was a considerable irregularity of the cloth, which showed low-density and very high-density areas.

The most external band of the cloth, albeit similar in structure, appears to be somewhat connected, or reinforced, to the Shroud's cloth by restitching.

It is a region which has been largely mishandled over the centuries. The cloth was handled right in those areas according to "exhibiting" and "displaying" techniques. We have a visual, authentic documentation of this constant damaging (pict. 1)

The first document is a print showing a 17th century public exhibition. The Shroud is grabbed with the hands exactly in that area.

(picture)

Picture 1: *17th century public display: the Shroud is grabbed at the upper margin.*

(picture)

Picture 2: *1898 public display: the same as in the previous display. The arrow indicates the corner where the sample for radio dating was taken in 1988.*

This is confirmed by the way the imprint is exhibited. The face is on the left side. As early as that time, this typical display was traditionally maintained. It is still in use today.

The second document is the 1898 public exhibition. The Shroud is presented to the crowd in the same way. There is a reason for this: that grabbing enables the public to have a better, logical vision of the imprint (pict. 2).

These are spine-chilling documents and have certainly not been discovered just today. They were universally known when it was decided to choose the part of the Shroud from which the sample had to be taken.

Average weight of the Shroud per cm², according to:

A. TIMOSSSI expert in textiles 23 mg
Prof. G. RAES Director of the Laboratory of Technology of Textiles,
University of Gand 25 mg
R.A. MORRIS National Laboratory of Los Alamos - 25 mg
G. RIGGI 20 mg

Means of the four data: 23.2 cm²

**As upper threshold limit, the average weight of
23 mg per cm² can be assumed**

In fact, instead of removing fragments of yarn here and there in order to reach the necessary weight, it was decided to cut a piece of cloth. The upper corner, to the left of the person looking at it, was cut, that is, in the spot where Raes had already cut a sample. Therefore, the Shroud's linen cloth was damaged again in a significant, more irreparable way.

We have come to the core of the problem.

At that time, product analyses carried out by experts Timossi and Raes calculated, with good accuracy, the MEDIUM WEIGHT PER SQUARE CENTIMETER OF THE SHROUD'S CLOTH.

It was also calculated with radiographs by Morris, London and Mottern in 1978, and the result was consistent with the previous ones. The lowest average weight was the one proposed on another occasion by the operator in charge of the sample to be radiodated.

Considering the irregularities of an ancient, handcrafted cloth, and in order to move within safer margins, we have applied a prudential, surplus tolerance to the measures indicated.

Let us therefore assume an average weight of 25.00 MILLIGRAMS PER SQUARE CENTIMETER of the SHROUD'S CLOTH.

Now, the following is what happened upon TAKING THE SAMPLE FOR RADIO DATING:

1) According to the official operator in charge of taking the sample, the sample measures cm 8.1 x 1.6, namely, cm² 12.96

2) In the video showing the taking of the sample, the weight measured on the scales is mg 478.1

3) Dividing the sample's weight by its surface (mg 478.1: cm² 12.96), we obtain a WEIGHT of approx. mg 36.89 per cm².

Therefore, the sample weighs mg 11.89 per cm² MORE than the original cloth should - at most.

4) However, the operator in charge of taking the sample says that he removed some irregularities and some "free" threads from the sample. (Let us skip the singular procedure of "rethreading" and squaring such a precious, ancient sample, wasting further irreplaceable material). The operator reduced the sample's measures to cm 7.00 x 1.00, namely cm² 7.00)

WEIGHTS OF THE SHROUD AND WEIGHTS OF THE RESTORATION WORKS

SHROUD → AVERAGE WEIGHT → 1 cm² (pict. of scales) mg 25.00

cm² 12%

WEIGHT mg 478.1

SAMPLE TAKEN → AVERAGE WEIGHT → 1 cm² (pict. of scales) mg 36.89

cm² 7.00

WEIGHT mg 300

RADIODATED PART

OF SAMPLE → AVERAGE WEIGHT → 1 cm² (pict. of scales) mg 42.85

The sample bears recent restoration works of
mg 17.85 per cm² - accounting for 41.65 % of the total

5) Then the operator reports the WEIGHT of the sample, "cleaned" and distributed to laboratories: mg 300

6) Dividing the weight of the "cleaned" sample by its surface of mg 300: cm² 7.00, we obtain a WEIGHT of mg 42.85 per cm².

The sample weighs mg 17.85 per cm² MORE than the original cloth should, at most.

This element is even more surprising and irregular than that of the "non cleaned" sample.

A few millimeters away, we find differences of nearly 6 milligrams per square centimeter. (Difference between 36.89 and 42.85 = 5.96).

7) AS A RESULT, WHAT EMERGES IS THE PROOF THAT THE SAMPLE WAS IRREGULARLY LOADED WITH FOREIGN, UNDETERMINED TEXTILE MATERIAL - in other words, MANY THREADS WERE ADDED FOR ITS MENDING with various techniques IN DIFFERENT, MUCH LATER AGES.

8) The proportion of the "youngest" threads is 32.23 % - almost a third of the total - on the whole SAMPLE. In the case of the "cleaned", radio dated sample, it increases to 41.65% - approaching the half.

These data, which are already striking per se, could be subject to further modifications and radio dating could be even more unreliable if the average weight was that declared by the operator, namely, just 20 milligrams.

If that were the case, the mixture of textile material in the taken sample would rise to 45.80 % and, in the "cleaned" sample delivered to the laboratories, will reach the striking percentage of 53.30%

Such a mixture of younger radiocarbon material - how much younger? Twelve, fifteen, sixteen centuries? - dramatically changes the amount of residual carbon 14.

It should be borne in mind that testing laboratories always carry out a rigorous cleaning procedure on samples to be radio dated, and eliminate any impurities and foreign bodies. But they could not eliminate the YOUNGEST LINEN CLOTH, structurally consistent with the original.

Furthermore, the amount of "younger" threads varies depending on the parts of the Shroud and is documented by the weight differences observed even in contiguous parts. It is reflected in the examinations' results, probably astonishing the radiocarbon experts themselves, who consulted with one another in an attempt to come to a "common average dating".

In fact, the three radiodating examinations show sharp differences. The resulting dates range from 1290 and 1390. Here too, it is possible to note the irregular mixture of original fibers with younger fibers.

This completely changed the radiodating data, which appear unreliable.

Finally, it should be noted that such calculations start with the weight per cm² of the "original" linen cloth in its entirety. It is clear, though, that there would have been no need to mend and restore an intact region. Therefore, we do not know "how much" of such mishandled corner of the original cloth has unraveled or got pulverized; in other words, HOW MUCH OF IT HAS BEEN LOST IN TERMS OF WEIGHT and by how much the percentage of the restoration increases as a result.

In light of the above, really nobody knows on "what" the radio dating operation was carried out.

All of this, maybe, led to the contradictions, inaccuracies and accusations which surrounded the operation: the cutting of the samples, their delivery, their radio dating.

We will not resume any arguments, suspicions and more or less fictional reconstructions.

Perhaps the historical and archaeological tragedy which was the radio dating of the Shroud of Turin, defined in the course of the heated arguments as a wild medieval trial by ordeal, was a scientific accident.

At this stage, we cannot fail to highlight that according to very recent discoveries and experiments, there is an increasing, concrete need to review the parameters used until now for radio dating cloths, particularly those which may have been subjected to environmental aggressions or temperature leaps. Let us leave the development of this aspect to the experts of the field, as it totally upsets the results of the 1988 radio dating examination of the Shroud. As far as we are concerned, we are

proud to have substantially collaborated to presenting for the first time here in this symposium in Rome and reporting to the international press this discovery, which is so closely related to the real, two-thousand-year-old age of the Shroud of Turin.

Those who, by virtue of well-founded archeological, historical, medical-legal and scientific evidence, recognize in the Shroud the burial sheet used in the most famous trial of the Roman Empire, believe that this should open the way for a more free, concordant regular studies on the subject.

"The data indicated in this report were all garnered from official scientific reports. Particularly significant are the videorecordings carried out by the operators and the data appearing on the instruments shown".