

RESEARCH ARTICLES (2)

INVISIBLE WEAVING

Hugh Farey

In 1988, the Shroud of Turin was radiocarbon dated to the fourteenth century, and in spite of considerable historical and artistic evidence supposedly derived from the Shroud in earlier times, the balance of credibility tipped firmly in favour of a medieval origin. Since then, some interesting new arguments have been brought forward to suggest that the radiocarbon dating was faulty, and of those, the most persistent and persuasive has been that the sample tested was in fact made of a mixture of ancient and more modern threads, giving a date between the two. This hypothesis has levelled the balance somewhat, and for some, tipped it decisively in favour of authenticity.

Putting aside, for the purposes of this article, Ray Rogers's findings regarding anomalous vanillin, dye and gum, and various other scientists' discovery of cotton fibres of various proportions, all of which could support, rather than demonstrate, the interweaving hypothesis, the real question is: what is the direct evidence for interwoven threads, and how 'invisible' is 'invisible'?

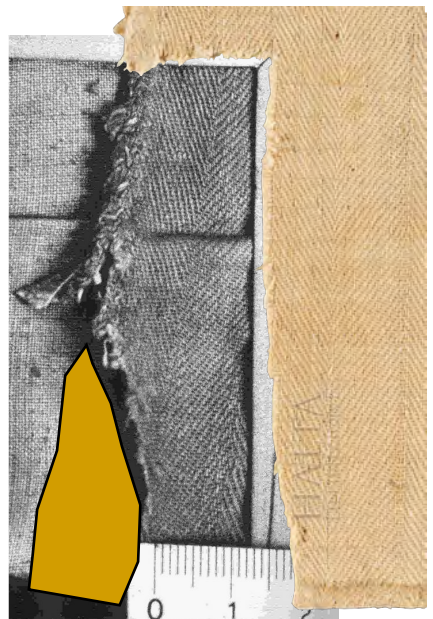
Clearly, a sewn-on patch, or a normal 'sock darn' would be easily visible to the naked eye, and no such mending is apparent on the Shroud, except where the Poor Clare nuns applied clumsy patches over the burn holes sustained in the Chambéry Chapel fire of 1532, but the finest tailors are able to reproduce the thread pattern across a piece of damaged cloth so closely as to make the repair almost literally invisible. They normally use threads extracted from the cloth itself, such as inside a hem or turn-up, to match the damaged threads exactly and interweave them among the undamaged edges of the hole or fray to give purchase, before taking them across the damage to another firm area on the other side. For a few millimetres around the edges of the damage then, the old and the new

threads are both present, and the cloth is twice as dense.

But is it invisible?

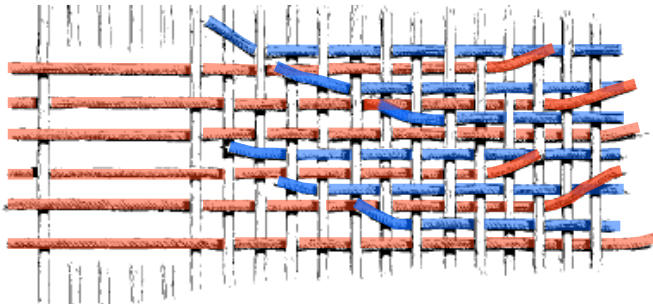
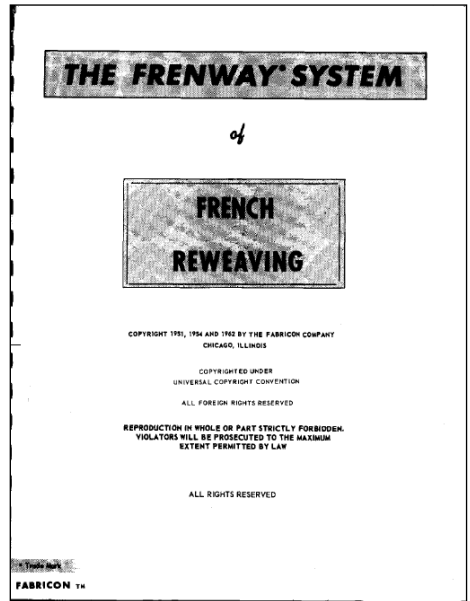
The photo at the right shows the corner of the Shroud from which various samples have been cut off. The largest is the big pale rectangle which may have been cut away to distribute in pieces as commemorative relics by the Savoy family, although we don't know when, and the other two, still in place in the upper photo, are a triangle cut out in 1973 for examination by the Belgian textile expert Gilbert Rae (shown brown in the lower image), and the radiocarbon sample (later subdivided into several pieces), shown in black and white just before it was cut out. Around it is the Shroud as it is today. This lower picture, note, is actual size, as can be seen by the ruler.

In order to skew the date of a first century cloth by 1200 years when radiocarbon dated, some 60% of the black and white photo should be composed of seventeenth century threads, more or less evenly distributed, as twelve different subsamples of the upper half of the area were tested, and all twelve gave a medieval date.



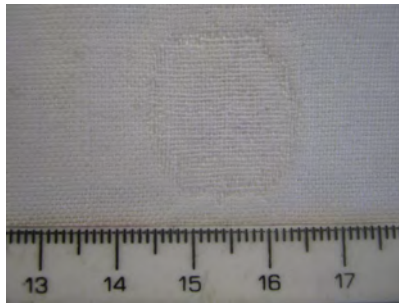
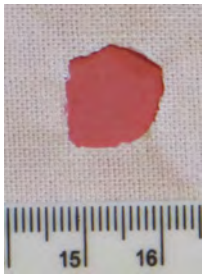
Now let us examine exactly how to do this, by means of a wonderful old instruction book called the Frenway System of French Reweaving, from 1951. This has recently been reprinted - or more likely offered on 'print-on-demand' - but I have an old photocopied version, whose cover is seen on the right.

The little pamphlet is painstakingly detailed, delivered in a series of exercises beginning with how to follow a thread with a needle, how to thread a needle, and how to replace single broken weft threads, before finally arriving at patching a hole. Here is a diagram from that section. I have coloured the original weft threads blue and the replacement threads red, so that there can be no doubt firstly that there is a small border to the damaged area of the cloth where both new and old threads overlap, and secondly that there are loose ends of the threads, which must subsequently be tucked away behind the exposed face. This demonstrates that in a practical example of invisible mending, firstly there will be a small border to the damage where the cloth is denser than elsewhere, and also that the loose ends of all the threads will be visible on the reverse of the cloth.

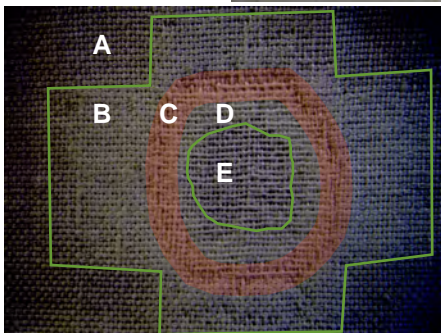


With all this in mind, I cut a small hole in a piece of linen and sent it to The British Invisible Mending Service Ltd., asking its proprietor Howard Vanderberg for it to be repaired to the best of their ability. The hole was about one centimetre across, and required about 90 new threads. It should be noted that at 30-40 threads per centimetre, the Shroud 'mend' would have required some 300 new threads to replace 60% of the older ones.

The result from The British Invisible Mending Service was astonishingly invisible, even under magnification. At the border, where old and new threads merge, the two seem to run not side by side, but one above the other, so that there is no sign of the doubled threads from above, although the cloth is, of course, twice as thick at those points. As the photo below shows, the only indication that the hole ever existed is a slight deformity of the contours around the hole, and neither an obvious deviation, nor an obvious doubling, of the threads. For a moment I wondered if Sue Benford and Joe Marino, the original proponents of the interweaving hypothesis, could have been right all along.

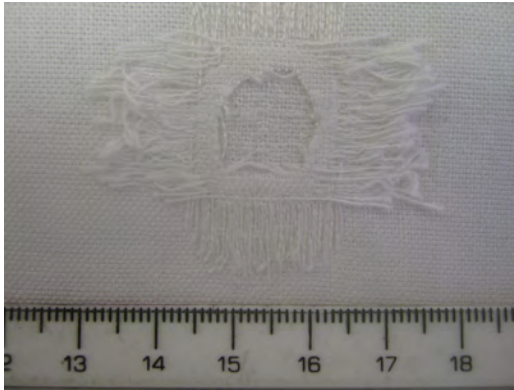


Far left: the original hole.
Left: the mend.
Both actual size.
Both in ambient light.

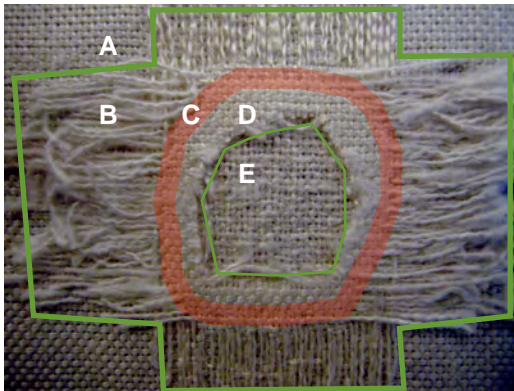


High contrast photo showing:
A: Original cloth.
B: Original cloth overlying mend.
C: Merged border.
D: Mend overlying original cloth.
E: Mend alone.

The reverse of the cloth, however, reveals all.



The mend from the back.
Actual size.
Ambient light.



High contrast photo showing:
A: Original cloth.
B: Mend overlying original cloth.
C: Merged border.
D: Original cloth overlying mend.
E: Mend alone.

The loose ends of the new threads are allowed to stay long, and ironed flat, and the edges of the hole are similarly left loose. No doubt one could trim all these to within a few millimetres of the interweave, but they would still be clearly visible. Needless to say, there is no evidence of any such fringes on the reverse side of the Shroud, or the reverse side of any of the photos of the extracted samples.

This is the ancient French system of invisible mending. Although almost perfect from one side, it is clearly identifiable on the other. It is inconceivable that it would not have been noticed by the scientists carrying out the radiocarbon dating.