

The Four L-Shaped Burn Holes on the Shroud of Turin

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To this day, it is still unclear as to what caused the L-shaped burn holes, often referred to as either the *Poker Holes* or *Incense Burn Holes*, which are highlighted in fig. 1 below.



Fig. 1. The Shroud of Turin

The use of the term *Poker Holes* to describe these burns comes from the idea that the cloth was tested for authenticity through a ‘trial of fire’ with the placing of a poker or similar object against the cloth; this explanation was proposed by Ian Wilson, the Shroud Historian. There is also a school of thought that the burn holes were produced by contact from molten incense (Antoine Legrand). Dr. Flury-Lemburg has proposed that the burn holes had been caused by contact with a corrosive substance, like an acid.

All these hypotheses are worthy of investigation but the principal questions that we should attempt to answer are as follows:

- What caused these burn holes?
- When did this happen?
- Where did this happen?
- Who was involved?

This paper will attempt to address these questions and proposes some hypotheses so that we may be able to get to the truth about these markings.

Within the Hungarian Pray Manuscript, otherwise known as the ‘Pray Codex’, written about 1192-95, there exists a drawing portraying the Shroud with these four distinct burn holes. These four markings are shown in fig. 2, circled in blue. Thus it is highly likely that these holes were present on the Shroud cloth before 1195, as evidenced in this drawing. This gives us a date probably before the end of the 12th century.



Fig. 2. The Hungarian Pray Manuscript

The STURP test plan published by Barrie Schwartz, shows that they investigated areas close to these burn holes using Infrared Reflectance Spectroscopy, Ultraviolet Spectroscopy and Photomicrography on both the Dorsal and Ventral images. However, after an exhaustive study of the resulting papers, I have failed to find any conclusion about the cause of these holes, other than those found in the team's description of them as 'burn holes'.

The Shroud could have been folded up when the burn holes were made which leads us now to examine the possible folding patterns when this happened. The folding pattern can give us some possible clues as to the circumstances surrounding the incident: if the Shroud was fully open, then it is highly probable that it was on display when the holes were made. If the Shroud was folded up, it was unlikely to have been on view and was probably in storage. Let us consider, then, some of these folding options.

Shroud Fully Open

The unfolded arrangement is shown in Fig. 3. When open as such, we see four distinct L-shaped markings. Each L-shaped marking has a varying degree of burns, the left side dorsal more than the right side. The device or substance which caused this could well have been in contact with the cloth at different times at each corner, or the concentration of heat, or corrosiveness/quantity of a substance, may have varied at each corner. We can certainly see that the degree of penetration of these burns is greatest at position 1, then position 2, then position 3, and least of all at position 4. If the Shroud was horizontal when this occurred, then it could have either been on top of the device/substance, or the device/substance could have been on top of the Shroud. If the Shroud was in a vertical position when this occurred, then there is a good probability that the Shroud was on display for viewing.

If it was incense that caused the markings in this position, then the Shroud would have been exposed for veneration, and positioned in full viewing for this. However, it's unlikely that there would have been four distinct, but also regular L-shaped markings resulting from incense accidentally falling on the cloth if it had been fully open and lying flat.



Fig. 3.

It's possible that the holes were caused by some kind of a solid structure and such a contrivance might well have been constituted of four similar but separate parts, each

placed at positions 1 to 4 on the cloth; alternatively, there could have been two similar devices; one on the left, the other on the right; or simply, one complete structure. Once again, the cloth could have been laid on top of the device or the device placed on top of the cloth.

Another interesting characteristic here is that the four distinct L-shaped burns do not actually damage the image on the cloth, as they seem to surround the upper torso of the dorsal and ventral image on the Shroud: whether this is a fortunate accident or intentional is another possible question.



Fig. 3b.

One hypothesis proposed by Dr. John Jackson of STURP is that the cloth might have been used for the ‘Last Supper’, possibly laid on the original table. If this were proved, these L-Shaped markings could have come, for example, from a Hebrew Oil Lamp. The disciples certainly would have required some form of lighting while in the room. There could have been four lamps placed in positions 1 to 4 in fig. 3. The burns may have been caused by a hot substance falling from the lighted wick within the lamp onto the cloth. Some lamps, such as the one shown opposite in fig. 3b, have multiple wicks enabling several flames of light. Olive oil may have been used as fuel and flax (linen) for the wick.

Shroud Folded Once

The two specific foldings I will be looking at are lengthways, along the line marked X-Y below, and widthways, along the line marked A-B.

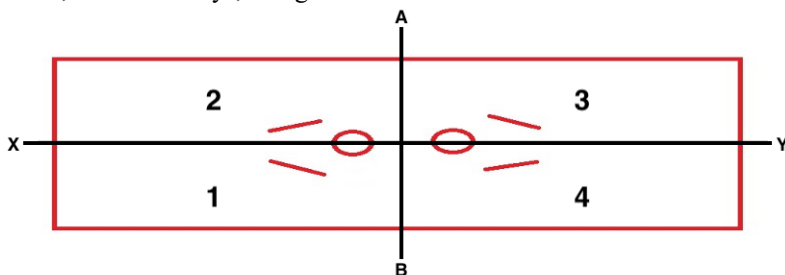


Fig. 4

If the Shroud was folded along the black line marked X-Y, that is along the whole body, the result is as shown below in fig. 5. Here, I have considered the option where the folding is such that the image is on the outside. It is also possible for the cloth to be folded so that the image would be on the inside.



Fig. 5

In this illustration, we can see two similar L-shaped burn holes, the penetration being greater on the left-hand side than on the right. It would be unlikely that the Shroud would be displayed in this folded state. Instead, it is more likely that the Shroud would have been in the process of either being prepared for storage, or being opened for display. It is improbable that the cloth was stored open to its full length of 14ft 5ins, due to the length of the container required: the preference would be to fold it in half to fit in a shorter container. One matter to be considered here is that the degree of burn on the left side goes from the top of the cloth through to the other side (i.e. position 1 to 2) while the right hand burn originates from the opposite side of the cloth (i.e. position 3 to 4). This may indicate that if the cloth was horizontal when the burning occurred then the device or substance responsible was on the top surface on the left side, but on the bottom surface on the right side.

It is unlikely the cloth would have been horizontal when put through a ‘trial of fire’ with a poker when thus folded, since the cloth would have to be turned over at least once to administer the burns at position 3 (the opposite side to 4) having performed them at position 1. It is therefore more likely that the cloth would have been vertical.

This is similar to the idea of incense as the cause. When the cloth was venerated, it is more likely to have remained in a fixed position and not been moved: this is possible if the cloth was vertical and those present walked around it when venerating.

If the Shroud was folded along the line marked A-B in fig. 4, the result would be as shown in fig. 6. A similar folding can be achieved with the image on the inside. Here we see two L-shaped burns with more penetration on the bottom than the top and the penetration from the back (dorsal) greater than the front (ventral). The cloth could well have been displayed in this position. Once again it is possible that the cloth could have been placed horizontally on a surface, dorsal side down, where the substance (e.g. acid, incense, etc.) then penetrated through the cloth from the back to the front. Those present may not have realised the cloth was being damaged until the burns appeared on the upper surface.

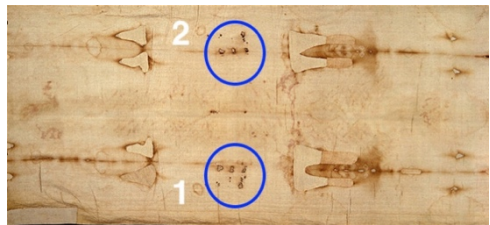


Fig. 6.

There are also two small burn marks between the legs which are circled in red as shown

in fig. 7. Could these two burn marks have occurred at the same time the other L-shaped burn marks were made? They form a very distinctive straight line between the legs of the image and are of a similar width to the L-shaped burn mark. In fact, all these burn marks can be placed in a rectangle.

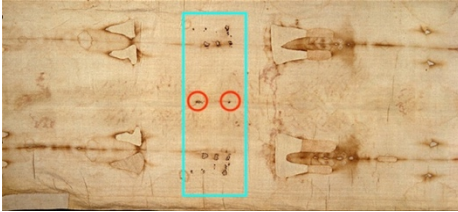


Fig. 7.

Consider this folding with a real body wrapped inside the cloth. Note that the L-shaped burns and the two centre line burns seem to fit around the mid region of the body image. These L-shaped burns seem to have come from the side of the body, as if they were on the outside of each thigh or from the front of the thighs when the cloth was wrapped around the

body. This gives one a sense that something might have been wrapped around the body in the form of a corset. Another interesting point here is that from the front image, this blue rectangle encompasses the area over the arms crossed as in fig. 8.



Fig. 8.

Could these burn markings be the outlining of a device, possibly a metallic chain with ropes threaded through? This may have been used to keep the arms and hands fixed. These burn marks could have been made at the same time that the body image was formed: it would have occurred when the body was inside the tomb. Although there is no side image to the body, there are blood markings on the Shroud from the side of the body: could these marks be from another object that was on the side of the body?

Shroud Folded Twice

Here we consider the possibility that the Shroud was first being folded lengthways along the X-Y line in fig. 4, and then widthways along the A-B line. The result is shown in fig. 9. below.

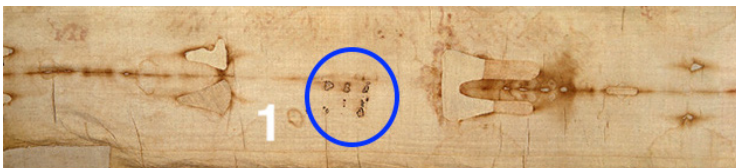


Fig. 9.

Here we see just one L-shaped burn on the surface of the cloth. This is very interesting because the penetration of the burns through the cloth is progressive weaker from the top surface to the bottom surface (i.e. from position 1 to position 4). This implies that the penetrations most likely started on the top surface and made their way through the layers of the cloth. A substance such as molten incense, or some form of corrosive liquid substance such as an acid, may well have caused this damage.

The cloth would probably not have been on public display or viewed when folded in this way. It could have been kept in storage, where molten incense could well have accidentally fallen onto the cloth while it was in a horizontal position. On the other hand, the cloth may have been accidentally placed horizontally on top of the substance without those present realising it. They would not have noticed anything until the incense had burned through the cloth.



Fig. 10a. Incense burner.

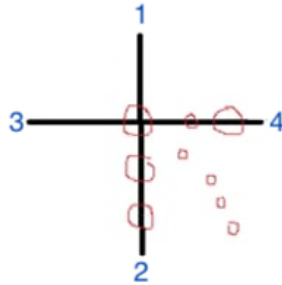


Fig. 10b.

The L-shaped burn holes actually mark out half the cross which a person venerating the cloth with an incense burner would most likely have signed, by following a path of 1→2→3→4 as shown in fig. 10b above. This could have caused incense to fall diagonally, mapping a path like a projectile of smaller size pieces of incense carried by gravity (i.e. the smaller holes map out an approximate parabola). There is moderate probability that the sign of the cross was made here, which would make it more likely that the cause of the burns was incense rather than a corrosive liquid. If it was being venerated during this time, the audience present must have known the significance of the cloth and might well have been members of a religious order.

Shroud Folded with Face Only Displayed

There is good historical evidence that the Shroud was displayed in Edessa around 525AD. Only the face of the cloth was displayed and was known as the Mandyllion, or Image of Edessa. There are a few ways of folding the Shroud in order to display only the face, but one intriguing way is as follows:

The cloth is folded from the top down and from the bottom up which positions the L-Shaped burns above and below the facial image as in fig. 11a below. The cloth is then folded across A then across B with the burns on the back of the cloth and the face on the opposite side. Finally the cloth is folded along D and then along C and the burns form a similar pattern to that shown in fig. 11c. This pattern is on the inside of the fold not the outside.

The outline in fig. 3 produces a rectangular pattern in which the burn holes occur at the corners. A rectangular device placed inside the cloth could have held the cloth to display the face only, as shown in fig. 11b. What could have caused such burn holes in this position and what was the device? Could it have been a simple wooden rectangular frame, or board, with the cloth wrapped around to display the Holy Face that was then kept in position by some adhesive/corrosive type substance placed at the corners as in fig. 11d?

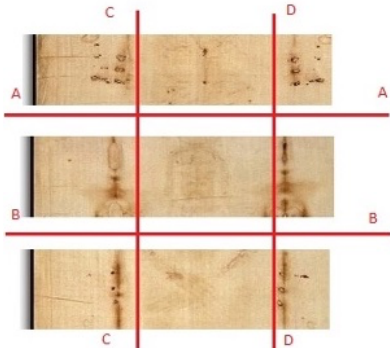


Fig. 11a.



Fig. 11b.

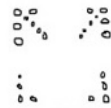


Fig. 11c

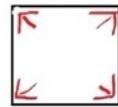


Fig. 11d.

Summary

These folding patterns open up several possible answers to our previous four main questions. I am sure there are more possible combinations of folding patterns which I have not considered, such the cloth being rolled up at some point.

As mentioned above, we can conclude from the presence of these marks on the Hungarian Pray Codex painting that the burning occurred at some time between 33AD to 1195AD. If the markings were caused by a poker, then we would probably be looking at a period of time when the cloth was in the hands of those who doubted its authenticity. If these markings were caused during its veneration, then maybe this was a time when the cloth was in the hands of firm believers.

The idea of molten incense as the cause of the burns is very probable, particularly if it

had been folded twice as outlined above. The incense could well have fallen on the cloth. Several folding patterns could have possibly led to these marks being made if the cause was a corrosive substance.

It's possible that a 'poker device' could have caused the burn marks but this would imply that it was in the hands of people who were sceptical of the cloth. The poker would have been placed in contact with the cloth for a period of several seconds and possibly repeated up to half a dozen times. What is interesting is that the markings do not touch the actual image, which does not place this as a really genuine 'trial by fire' since it's the body image that's most significant. The Shroud has been well protected over the years and there is little evidence it has been in the hands of sceptics to date.

I have assumed throughout this article that the larger burns that make up the L-shaped patterns happened at the same time as the much smaller burn marks along the diagonal. This is a reasonable assumption, but not necessarily absolutely correct, since on the Hungarian Pray Manuscript, there is no indication of these smaller burns across the diagonal. It could therefore also be possible that the larger L-shaped burns occurred at a different time from the smaller burns along the diagonal.

From the folding patterns we have looked at, the following scenarios could provide answers to the four principal questions posed at the beginning of this paper about the L-shaped marks on the Shroud:

1. They occurred within the tomb, during the body image creation caused by some object wrapped around the mid-region of the body.
2. They occurred during the 'Last Supper' and were caused by the oil lamp deposits on the cloth.
3. They occurred during veneration of the cloth when molten incense accidentally fell on the cloth and burned it. The audience present were members of a religious order and the veneration happened in a religious setting sometime between 33AD and 1195AD.
4. They occurred while the cloth was displayed in Edessa and the burns were caused in the early 6th Century by the means used to secure the cloth with the face only displayed.

There are many more questions than answers to this topic. I know many of you will have your own ideas and may disagree with quite a bit of what I have written, but that's good. We need to have more questions, more debate and more research into the L-Shaped Burn Holes.