

Mary Queen of Heaven Catholic Homeschool

What is the Shroud of Turin?

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March 29, 2017

[www.ymicatholic.com/ShroudResearch.pdf](http://www.ymicatholic.com/ShroudResearch.pdf)

This research paper examines whether or not the Shroud of Turin is the true burial shroud of Jesus Christ. In this document, I explain exactly what the Shroud of Turin is, compile and summarize the various data accumulated by the Shroud of Turin Research Project (STURP) during their investigation, and inspect the validity of the 1988 radiocarbon dating test performed on the Shroud; using this information, I will propose the conclusion which follows logically and scientifically from it. Dr John H. Heller's book *Report on the Shroud of Turin*, Russ Breault's taped lecture *Shroud Encounter with Russ Breault: Would God use evidence?*, and Thomas W. Case's *The Shroud of Turin and the C-14 Dating Fiasco* comprise the primary sources for this document.

### **What is the Shroud of Turin?**

Any discussion of the Shroud of Turin must follow a clear explanation of its indisputable attributes. The Shroud of Turin is a 14' long, 3.5' wide cloth made of twisted linen. The threads of the cloth are handspun, and the weave is a three-to-one herringbone twill. Faintly visible on the Shroud are straw-yellow images, both frontal and dorsal, of a scourged and crucified man. The man is a 5'11", muscular, Caucasian male, weighing about 178 lbs. Next to the image are a series of burn marks resulting from a fire in 1532 A.D., and a series of water stains are also visible in several areas. For centuries, many Christians throughout the world have revered this Shroud as the burial cloth of Jesus of Nazareth, despite a skepticism which has endured throughout the cloth's history. Many theories exist as to how the image came to be on the Shroud; while some insist that it is a forgery or a natural phenomenon, others claim a miraculous origin for the image. The twentieth century marks the beginning of serious scientific study of the Shroud, enabling an objective analysis of these theories for the first time.

## **Is it a Forgery?**

The single most popular theory about the Shroud is that it is simply a painted forgery. When the Shroud was radiocarbon dated in 1988, the resulting dates of 1260-1390 A.D. seemed to corroborate this theory. At a later point, I will examine the radiocarbon test in more detail. Here, I propose to point out the evidence which renders this theory impossible.

When the Shroud was first photographed in 1898, the photographer, Secondo Pia, discovered that the Shroud image, ordinarily indistinct, becomes clear and detailed in a photographic negative. The only explanation for this phenomenon is that the Shroud image itself is a photographic negative. If the Shroud is a forgery, this fact raises a puzzling and, to date, insurmountable question; how did an artist create a negative image over five hundred years before the invention of photography, and why did he do so?

A plenitude of evidence exists that the image is not a painted image. Every type of paint, by definition, requires some sort of binder agent, which forms the colored film over the painted object. After extensive research and testing, STURP scientists discovered that no paint binder is present on the Shroud, which means that, if the Shroud is a forgery, it is not a painted one. On the contrary, they determined that the image was formed by some unknown dehydrative acid oxidizing agent, which reacted with the thin sugar-compound carbohydrate layer which covers all of the threads of the Shroud. This layer is a natural result of ancient methods of preparing flax. To date, the only substance known to produce such an oxidization is sulfuric acid. However, no artist could have painted with sulfuric acid, because it would have destroyed his brush. Therefore, the only substance known to produce a straw-yellow dehydration like that on the Shroud can be effectively eliminated from consideration.

Additionally, the bloodstains on the cloth apparently contradict the forgery theory. Real human blood, both pre-mortem and post-mortem, is present on the Shroud, and the scourge marks are surrounded by serum albumin. Since serum albumin is visible only under ultraviolet light, the hypothetical artist would have had to paint without seeing what he was painting. The fibrils beneath the bloodstains are devoid of the straw-yellow coloration of the image, so the blood must have protected the cloth beneath it from whatever caused the image. By inference, this means that the blood must have been put onto the cloth *before* the image itself, posing further difficulties to the artist. More mysteriously, the pathophysiology of the scourging and crucifixion of the man is perfectly accurate, far beyond any medical knowledge existing in the ancient world. Finally, no Medieval artist would have painted with real blood for a forgery or a painting. Medieval and Renaissance artists were partial to enduring paints and pigments, and blood would (and, on the Shroud, did) discolor and flake over time. Since scientific testing for blood did not exist during the Medieval and Renaissance periods, no advantages were to be gained by the use of real blood in a painting or a forgery. The questions raised by the blood demonstrate the impossibility of fakery.

Finally, the physical and optical properties of the Shroud discredit the Forgery theory. VP-8 image analysis has revealed that distance information is encoded into the Shroud image; an accurate three-dimensional figure can be derived from it. Subjecting the Shroud to frequency analysis has revealed that there is no directionality to the Shroud image. Since every painting must have some directionality, even if it is only up and down, this information cannot be reconciled with the forgery theory. Additionally, the image only penetrates the very top microfibers of the Shroud. These microfibers are not the threads, but rather the fibers making up the threads themselves. Each microfiber is approximately 1/5000 of an inch in diameter, and

these fibrils are only discolored on their crests. Even today, there are no paintbrush bristles fine enough to paint the crown of a microfiber, even if the putative artist was physically capable of doing so. This seems to preclude the Shroud from being an artistic forgery. As a final point, the Shroud image is not even visible except at a distance of 1-2 meters. To produce this result, the artist must have painted with a brush from 1-2 meters long. As the human nervous system is not capable of holding a brush of that length still enough to paint the crown a microfiber from such a distance, this evidence serves to finally refute the forgery theory. The Shroud cannot be the work of a human painter.

### **Exudate Image?**

A second commonly-proposed theory postulates that the Shroud image is formed by some sort of natural exudate from a corpse, either in the form of bodily fluids or from preservative materials placed in the Shroud with the body. This theory, therefore, relies on the proposition that the image was formed by direct contact with a body. To refute this theory, I will provide detailed information into the properties of possible exudates and such a contact as is thought to have formed the image.

Opening this theory necessitates stressing that there is no known exudate from a human corpse that can possibly account for the Shroud image. If, alternatively, the image had been caused by applied burial materials as myrrh and aloe, those materials would have discolored when the Shroud was scorched in 1532. Nor is there any sign of capillary action or diffusion on the colored fibers, which wholly rules out any liquids or vapors having caused the image. This alone would discredit the theory, but more evidence exists.

When a cloth is draped over a corpse, the recessed areas, such as the eyes, do not come into contact with the cloth. If the Shroud image was caused by direct contact, whether by an exudate from a corpse or by burial ointments, the recessed areas would not be visible on the Shroud. Nonetheless, these areas are fully visible. Formation by direct contact would also result in a distorted image, because a three-dimensional figure cannot form an accurate two-dimensional image by direct contact. By contrast, the Shroud image is wholly undistorted. As a result, the image does not match with the bloodstains, such as the blood from the crown of thorns or the flow from the left arm. If the Shroud image was the result of an exudate from the body, it should necessarily conform to the bloodstains. Finally, the intensity of the color does not vary between the recessed areas and the areas where ordinary contact would occur. In the face of these facts, the exudate theory is untenable.

### **Energy Transmission Theory**

The third and final mainstream theory regarding the Shroud image deals with the possibility that it was caused by some energy transfer. The question of what type of energy varies between the assorted proponents of this theory, but the primary proposed types are heat and radiation. Various data, however, combines to disprove the energy transmission theory.

The Shroud image cannot be the result of ordinary heat, because VP-8 testing by STURP scientists has demonstrated that heat provides only seriously flawed distance information compared to the information encoded into the Shroud. Moreover, if the corpse or corpse facsimile had been hot enough to cause the non-contact areas to appear on the linen, then the contact areas would have burned through the cloth. By nature, a scorch mark will fluoresce orange under ultraviolet light, and in fact the scorch marks from the 1532 A.D. fire do fluoresce in this way. The Shroud image does not, which raises another problem with the heat theory.

Finally, heat does not cause either acid oxidization or a straw-yellow color when applied to linen. Therefore, heat cannot explain the images adequately.

Many forms of radiation exist, categorized as either ionizing or non-ionizing radiation. Ionizing radiation produces ions, while non-ionizing radiation does not. Typically, ionizing radiation is very penetrating, which means that it will not be notably diluted by air. If the image was caused by ionizing radiation, then the image would not have any distance information encoded into it, because the radiation exposure would have been approximately equal throughout the whole image. More importantly, radiation from a source, unless it comes from a laser, emanates in all directions, whereas the Shroud image is unidirectional and parallel. Although various forms of ionizing and non-ionizing radiation, including ultraviolet, infrared, and X-rays, have been tested, none of the fibers exposed to such radiation have oxidized to a straw-yellow color. Alkaline reactions also do not generally produce a straw-yellow color. However, an unknown combination of various radioactive reactants could conceivably create this color, so it is impossible to rule out radiation on this problem alone.

The radiation theory cannot be rejected on a purely chemical basis. Regardless, no hypothesis revolving around radiation can explain why or how a corpse would emit radiation, how such radiation formed a unidirectional image, or why the image appeared as a negative. Nor does it explain why there is no distortion in the image. As Dr. Alan Adler said in an interview,

“There are plenty of chemical processes that will produce the chemistry of the Shroud. There are plenty of physical processes that will produce the physics of the Shroud. What you have to do is find one that will produce the physics and the chemistry at the same time...And it's interesting that no matter what anyone has suggested, they haven't found

a mechanism that will correctly explain the biological, physical and chemical characteristics all at the same time.”<sup>1</sup>

Based on these physical limitations, radiation cannot adequately explain the image on the Shroud.

### **Refuting the Radiocarbon Dating Test**

One of the most common objections to the authenticity of the Shroud is the 1988 radiocarbon dating test, which assigned the Shroud to some date between 1260-1390 A.D. with 95% certainty. To many, this was convincing proof that the Shroud of Turin was, after all, merely a medieval fake. However, evidence has surfaced that has rendered the radiocarbon test results dubious at best and ludicrous at worst. Much of it is complicated, bearing upon the process of radiocarbon dating itself. This section records only the most elementary flaws in the testing procedure.

The simplest objection to the radiocarbon test is that the sample was not representative of the entire cloth. According to the original protocol for the radiocarbon dating, at least three samples were to be taken from the Shroud, and taken from three different areas. Instead, the protocol was jettisoned, and one sample from the left corner below the frontal image was divided into three parts for testing. In 2005, Ray Rogers, a thermal chemist and member of STURP who was working at Los Alamos National Laboratory, noticed an abnormality in the corner of the Shroud where the sample was taken. When he compared threads from the sample area with

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<sup>1</sup> T.W. Case, *The Shroud of Turin and the C-14 Dating Fiasco*, p. 68-69.

threads from the main body of the Shroud, he discovered that the corner was what appeared to be a medieval repair to the cloth. Instead of flax, starched cotton had been used to affect the repair, dyed with madder root so that it would blend in with the rest of the Shroud. The repair seemed to have been effected using the French method of invisible reweaving, a method of textile repair that was so effective that the mend was impossible to detect with the naked eye. Naturally, a sample from this area resulted in a medieval date, but the sample was not representative of the whole of the Shroud. Furthermore, the sample was cut from an area near both a waterstain and a scorch mark, either of which could, conceivably, have compromised the dating process. As a result, the date of the sample does not definitively state the date of the Shroud.

## **Conclusion**

No current scientific hypothesis can account for the image on the Shroud. No convincing evidence that the Shroud cannot be the burial shroud of Jesus Christ exists. Does this prove a miracle? According to the principle of Occam's razor, the solution with the least assumptions is probably the correct one. Barring some sensational discovery, therefore, it is reasonable to assume that this linen cloth is the burial shroud of Jesus Christ, and that it bears his image. Although this assumption will displease many people, it is an assumption supported by incredibly compelling science and unshaken by any significant invalidations. During his time on Earth, Jesus often used physical evidence to prove his divinity. Perhaps the Shroud of Turin is another piece of such evidence, left for the world to ponder through the ages.

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