Holistic Solution to the Mysteries of the Shroud

by Robert A. Rucker August 16, 2019 www.shroudresearch.net

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Bob Rucker

- MS in Nuclear Engineering, U. of MI, 1971
- 38 years in the nuclear industry
- Nuclear reactor design, criticality safety, statistical analysis of measurements
- Organized ICST-2017
- Organized the Shroud Research Network
- 23 papers on www.shroudresearch.net

Bob Rucker

<u>Friday</u>

Holistic Solution to the Mysteries 9:00-10:15 Understanding the Statistical Anal. 2:30-4:00

<u>Saturday</u>

Why We Can See the Image9:30-9:50How the image was formed10:00-10:20

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On the RESEARCH page:

- Paper 15: "Summary of Scientific Research on the Shroud of Turin"
- Paper 16: "Explaining the Mysteries of the Shroud of Turin"
- Paper 19: "Status of Research on the Shroud of Turin"

Shroud Research Network

• Oct. 2018, Hampton Inn, Richland, WA



<u>Methodology</u>

- Follow the evidence where it leads
- Apart from presuppositions
 - Naturalism: The only explanations allowed are those that are consistent with the known laws of science
- Forensic science / reverse engineering
- Section 3 of paper 19

Holistic Solution

- Burst of radiation from the body \rightarrow image
- Neutrons in the radiation \rightarrow shifts C¹⁴ date
- Radiation pressure \rightarrow transfers the blood
- Neutrons \rightarrow reddish color in blood
- Electrostatic forces \rightarrow elevate cloth & body

Mysteries of the Shroud

- 1. Image formation
 - A. Why can we see the image?
 - B. How was the image formed?
- 2. Date
 - A. What is the date of the Shroud?
 - B. What about the C¹⁴ dating?

3. Blood

- A. How did it get onto the Shroud?
- B. Why is it still reddish?

<u>Outline</u>

- 1A. Why can we see the image?
- 1B. How was the image formed?
- 2A. What is the date of the Shroud?
- 2B. What about the carbon dating?
- 3A. How did the blood get onto the Shroud?
- 3B. Why is the blood still reddish?

First 7 Decades of Research

Dr. Yves Delage, Prof. of Comparative Anatomy, Paris 1900-1902 ۰ Dr. Paul Vignon, Professor of Biology, Paris 1900-1943 ٠ Dr. Pierre Barbet, Prof. of Anatomy, Paris 1932-1961 ٠ Dr. Robert Bucklin, M.D, Forensic Examiner, LA 1941-1993 ٠ Dr. Frederick Zugibe, Chief Medical Examiner, NY 1953-2002 ٠ Dr. Alan D. Adler, Prof. of Chemistry, Conn. State U. 1978-2000 ٠ Dr. John Heller, Prof. of Medical Physics, Yale 1978-1995 • Dr. John Jackson, Prof. of Physics, Air Force Aca. 1978-٠ Dr. Baima-Bollone, Chief of Forensic Medicine, Turin 1978-٠

STURP's Image Investigation

- Experiments on the Shroud showed:
 - No pigment, no carrier, no brush strokes
 - No clumping of fibers or threads
 - No capillarity, no stiffening of the cloth
 - No cracking of the image along fold lines

- No body decay products

- Conclusion: image not due to:
 - Paint, dye, stain, liquid, scorch, body decay
 - Not a photographic process

A Dead Crucified Body

- A body was wrapped in the Shroud
- The blood came from the body
- STURP in 1981: "We can conclude for now that the Shroud image is that of a real human form of a scourged, crucified man. It is not the product of an artist."
- The image was formed by the body

Information

Why can we see the image?

- The information required to define the appearance of a naked crucified man
- Had to be transported from the body to the Shroud by radiation: particles/photons
- We can see the image because the information required to define the appearance of a naked crucified man has been encoded into the pattern of discolored fibers in the image.

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Discolored Fibers in a Thread

Nothing binds the discolored fibers together as paint would.

Cross section < of one linen thread containing 150 fibers.

Light sepia/straw color around the outside of the fiber. Lack of capillarity indicates that a liquid such as an acid was not used.

Possible discolored fibers on back side

Discolored Fiber

Light straw-yellow to sepia discoloration with a thickness of < 0.4 microns around the circumference of the fiber.

Diameter of the fiber , is about 10 to 20 microns (1 micron = 0.001 mm).







Requirements for Image Formation

- Discoloration Mechanism
- Energy
 - To drive the discoloration mechanism
 - Provided by radiation
- Information
 - To control the discoloration mechanism
 - Transported by radiation

Paper in Applied Optics

- "2D Reproduction of the Face on the Turin Shroud by Infrared Femtosecond Pulse Laser Processing"
- By C. Donnet, el al.
- March 20, 2019
- Excellent face: radiation + information
- Femtosecond = 10^{-15} second

Discoloration Mechanism

- Burst of radiation from the body
- High charge on the cloth, short time span
- Static discharge from fiber high-points
- Electrical flow on fiber circumference
- Heating fiber around the circumference
- "Lightning rod" effect creates mottling
- Static discharge \rightarrow ozone production

Discoloration Mechanism

- Heating & ozone \rightarrow damage to cellulose
- Time \rightarrow oxidation & dehydration \rightarrow color
- Causing all the unique characteristics
 - Image on the inside surfaces
 - Negative image containing 3D information
 - Extreme superficiality
 - Color due to change in electron bonding
 - Mottling of fibers with shielding of lower fibers

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History of the Shroud



Galatians 3:1

- You foolish Galatians, who has bewitched you, before whose eyes Jesus Christ was publically/clearly portrayed as crucified? (NASB/NIV)
- pictured as crucified (many translations)

Galatians 3:1

O avontoi Galatai, tis umas ebaskavev O foolish Galatians, who you bewitched

oiskatopthalmouslasousCristosto whombeforeeyesJesusChrist

proegrapha estauromenos;

was portrayed having been crucified?

- " pictured
- " placarded (poster in a public place)
- " signboarded (board bearing a notice)

It was in Constantinople up to 1204

- The "Image of God" was brought into Constantinople in 574
- Byzantine coins starting in 692
- Hungarian Pray Codex or Manuscript (1192-1195)
- French crusader Robert de Clari (1203-1204)

Burn Holes on the Shroud

- Four sets of "burn holes" due to folding, also called poker holes
- Cause is unknown
- They appear on a copy of the Shroud made in 1516 AD, so they predate the fire in 1532.
- Also appear on the Hungarian Pray Manuscript dated to 1192 AD, proving that Shroud of Turin was in existence prior to the C¹⁴ date.

Four Sets of Burn Holes



Hungarian Pray Manuscript

- Located in the National Szechenyi Library, Budapest
- Dated to 1192-1195 AD
- Pictures cloth of Constantinople
- Jesus' burial (top half)
 - No thumbs
 - Awkward arm crossing
 - Double length shroud
- After the resurrection (bottom half)
 - Herringbone pattern -
 - Four burn holes as on Shroud-
 - Blood shaped like crosses –





Four Burn Holes as on the Shroud



Image is not from 1260-1390

- Artist or forger in 1260-1390 would not have known or been able to:
 - Create a negative image without pigment, chemicals, liquid, or scorch that contains 3D information of the body-to-cloth distance
 - Fiber discoloration caused by a change from single to double electron bonds in cellulose
 - Flogging and crucifixion ~ 1st century
 - Nails in the wrists with thumbs folded under

Image is not from 1260-1390

- Artist or forger in 1260-1390 would not have known or been able to:
 - Add pollen that is unique to Jerusalem
 - Add pollen from a plant with long thorns
 - Microscopic dirt in abrasions on nose & knee
 - Microscopic chips of Jerusalem limestone
 - Put bilirubin and nanoparticles of creatinine and ferritin in the blood indicating torture
 - Use of a unique stitch ~ stitch from Masada

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2B. What about the carbon dating?

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- 3B. Why is the blood still reddish?

Cutting of the Samples, 1988



Location of Samples for C¹⁴ Dating

-3 samples cut from here



Location of Samples



1988 Carbon Dating of the Shroud

- Damon, et al, "Radiocarbon Dating of the Shroud of Turin", *Nature*, Feb. 16, 1989
- Average of 3 laboratories = 1260 ± 31
- Correction for changing C¹⁴ in the atmosphere \rightarrow 1260 to 1390 AD, 95%
- "These results provide conclusive evidence that the linen of the Shroud of Turin is mediaeval."

Neutron Absorption Hypothesis

If neutrons were included in the burst of radiation that caused the image, then some of them would have been absorbed in N¹⁴ in the Shroud to produce new C¹⁴ atoms.

N^{14} + neutron $\rightarrow C^{14}$ + proton

This could shift the C¹⁴ date forward by thousands of years.

C¹⁴ Date in Shroud Below the Body



Dates are a Function of Sample Location



Effect of Producing New C¹⁴



Predicted Date (Change in C¹⁴)



Neutron Absorption Hypothesis

- Is the only hypothesis consistent with the 4 things we know about C¹⁴ dating as it applies to the Shroud
 - 1. C^{14} date to 1260 ± 31, uncorrected
 - 2. Slope of C¹⁴ date = \sim 36 years per cm
 - 3. Range of dates = 1155 to 1410 AD
 - 4. Date for Sudarium of Oviedo = 700 AD

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Radiation Pressure

- A very rapid powerful burst of radiation from the body could thrust the blood off the skin and accelerate it away from the body.
- Onto and into the cloth
- By a transfer of momentum
- Applies to particles and photons

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Reddish Blood

- Not caused by high bilirubin
- Could be due to neutron absorption
- Previous experiments
- Need for new experiments

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