



Dating The Shroud of Turin Weighing All The Evidence

Science, History, & Art
The Search for Truth

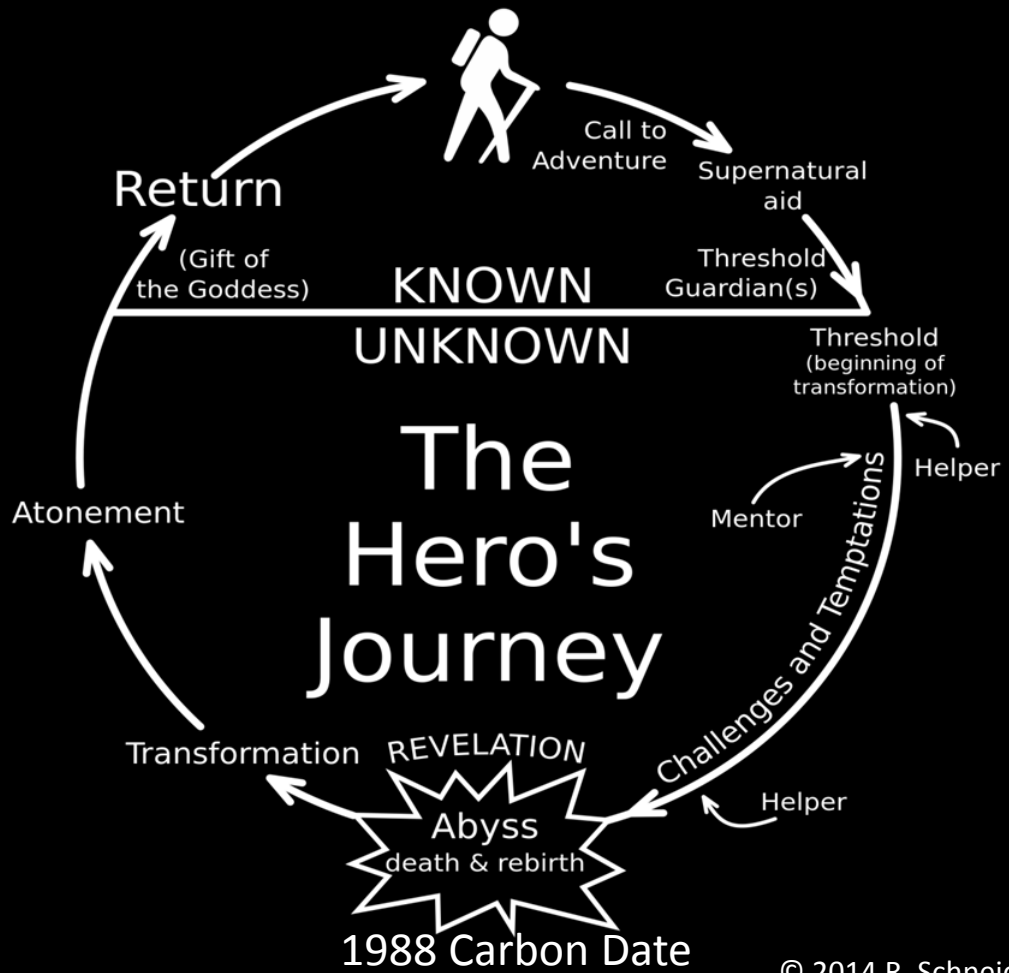
The Shroud Balancing Act

"It's All A Game of Who Do You Trust?"



The Journey to the Truth

A Journey with many mentors



Many Shroud Researchers Have Contributed to the Journey and There will be Many More Before the Journey is Done.

1988 Carbon Date



The Primacy of Story

- Science Stories
 - A Story With Mathematics/Analytics
- History Stories
 - A Story With Documents
- Art Stories
 - A Story Told In Pictures and Artifacts
- Eyewitness Stories
 - A Story By Someone Who Was There
- Religious Stories
 - A Story About The Acts of God



Truth: The Test of Story

The Test
of a story is
whether
It Is TRUE?



What Is Truth?



Ecce Homo!

Unless I See I Will Not Believe

Truth is the Correspondence
Between Story and Reality





What Is Truth?



Ecce Homo!

Unless I See I Will Not Believe

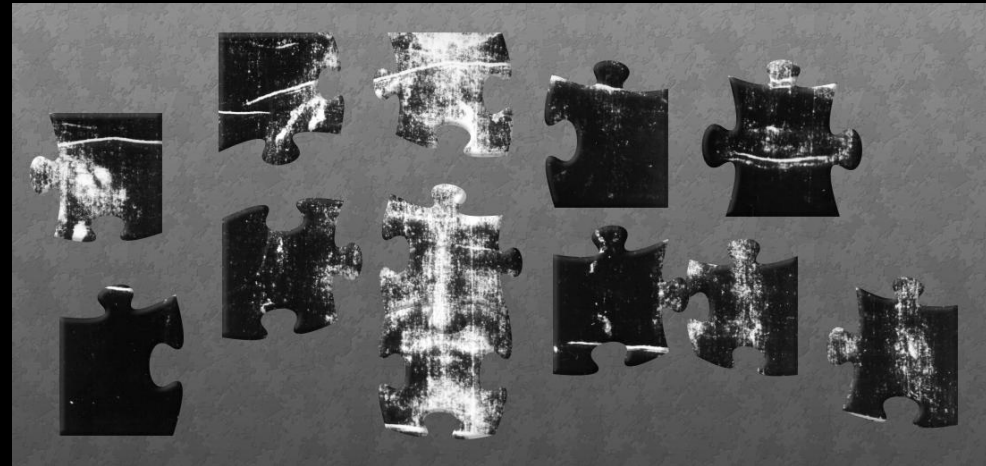
Truth is the Correspondence
Between Story and Reality





How Do You Know The Truth?

- Direct Observation
 - Witnesses
- Correct Interpretation
 - Understanding
- Correspondences With Other Known Truths
 - Correlation and Explanatory Principles
- Coherence
 - It All Fits Together





Science Cutting Off Debate



**Carbon Dating Announcement
October 13, 1988**

**I Guess I Didn't Get The Memo:
When Did Carbon
Dating Become Infallible?**



Edward Hall (left), Michael Tite (centre) and Robert Hedges at the British Museum after revealing their findings on the shroud.

Turin Shroud shown to be a fake

By Michael Sheridan in Rome and Phil Reeves in London

CARDINAL Anastasio Ballestrero of Turin yesterday confirmed what newspaper readers around the world have known for weeks: that tests on the Turin Shroud have shown it to be of medieval origin.

The shroud, believed by many to carry the imprint of Christ's face and body when laid in the tomb, has attracted devout pilgrims to Turin for centuries. Leaks of the results of modern carbon-dating tests had infuriated the archbishops of Turin and the shroud's Italian custodians who spoke darkly of foreign plots against Italy, anti-Catholic prejudice and the like.

Yesterday it was at last official: the tests had established a 95 per cent likelihood that the 14-foot linen was made between 1260 and 1390 AD. There is no chance that it dates back to the time of Christ.

Cardinal Ballestrero pointed out that the church had never claimed that the shroud represented Jesus but had honoured a tradition of piety rooted in centuries past.

"Considering the results of the scientific tests, the church reiterates her respect and her veneration for the shroud," he said.

The tests were carried out in laboratories at Oxford University and in Arizona and Zurich. They were based on counting the number of radioactive carbon 14 atoms in a fragment of the shroud about the size of a postage stamp. However, they did not resolve the icon's ori-



The Shroud of Turin: exposed as a fake.

gin, or the mystery which surrounds the blood-stained image on the shroud, resembling a photographic negative, of an apparently crucified man.

Professor Edward Hall, the director of the Oxford research laboratory involved, gave his theory: "There was a multi-million pound business in making forgeries during the four-

teenth century. Someone just got a bit of linen, faked it up, and flogged it." Professor Hall, 64, who said he had a file full of mostly "crazy" letters from believers in the shroud's authenticity, added that some people would probably continue to regard it as genuine, "just as there is a Flat Earth Society". But he was utterly convinced his findings were right.

Modern Catholic teaching holds that relics are an aid to devotion. They divide into three classes: a first-class relic is either an instrument of the Passion, such as the Turin Shroud, or bones of the saints.

A second-class relic is an object which has touched one of these, and a third-class relic is an object which has touched a second-class relic.

The disappointment to believers in the shroud is unlikely to deter enthusiasts for the tens of thousands of relics, many of them the products of medieval tricksters, which repose in gilded cases and cushioned jewel-boxes in churches throughout Italy.

In Rome, one may view a feather from the Archangel Gabriel at the church of Santa Croce in Gerusalemme.

Other examples include vials containing the last breath of Saint Joseph, several heads of Saint John the Baptist, innumerable splinters from the True Cross, and two thorns from the crown.

In Naples, a vial containing the blood of Saint Januarius miraculously liquefies each year. In 1980, when it failed to do so, the city was struck by an earthquake.

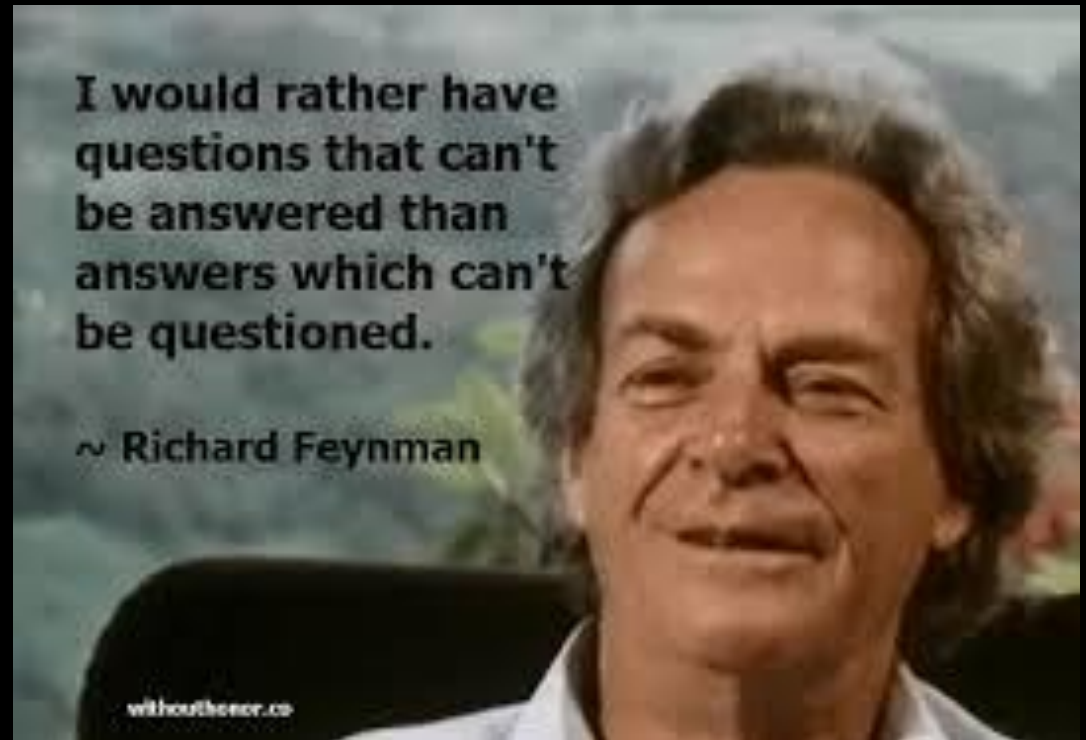




Weighing The Evidence

"You see, if you don't have a good reason, you have to have several reasons ..."

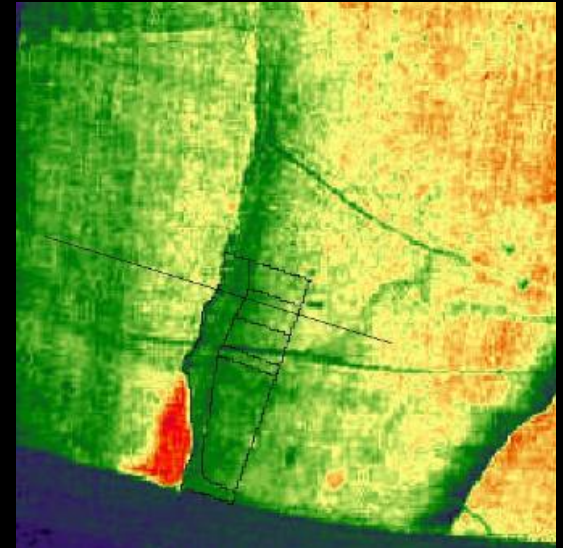
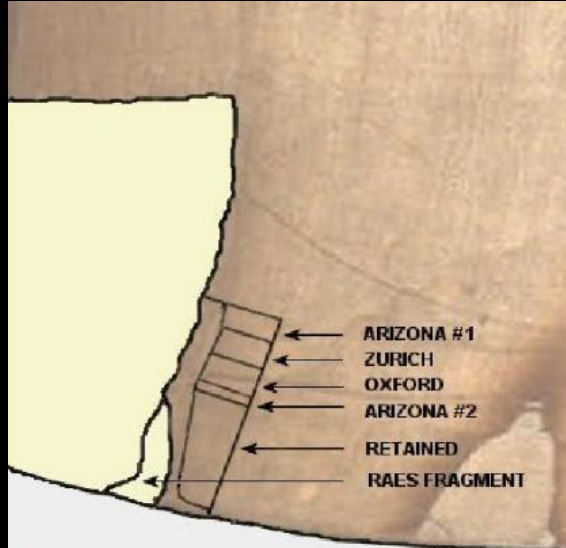
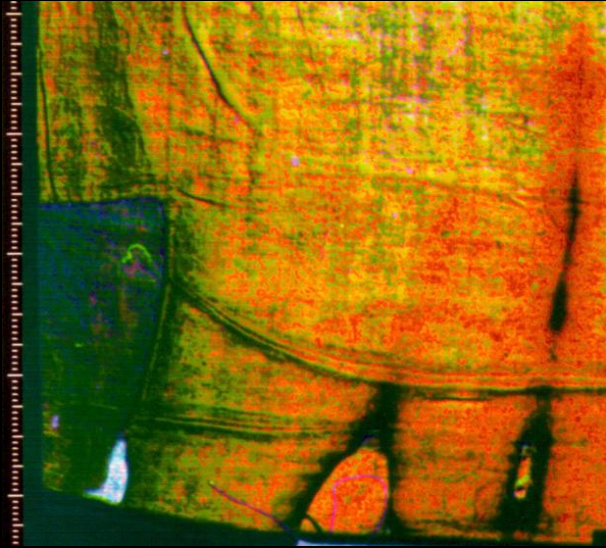
Richard Feynman
The Meaning of It All





What's Wrong With Carbon Dating?

The Samples Must Be Uncontaminated and Representative of the Whole

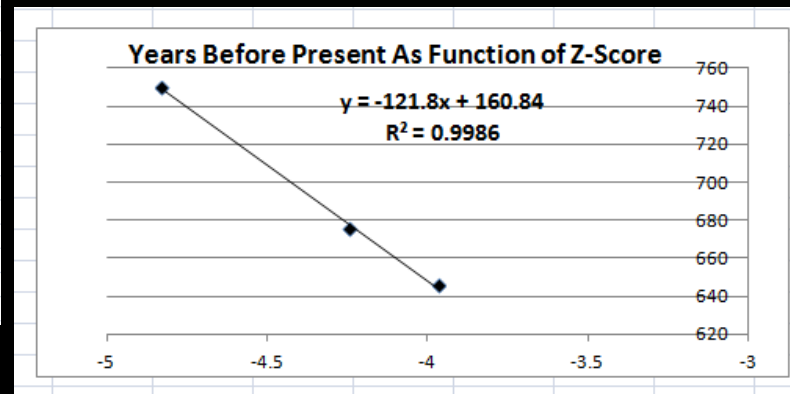
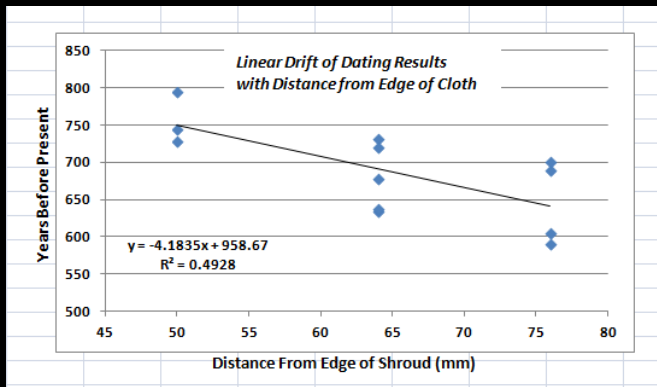


Blue Quad Mosaic

UV-Fluorescence

False Color Depiction of 1st Component of PCA

$$\chi^2 = 6.4$$



Samples were contaminated and dating correlated strongly with the contamination



The Saga of the Super-Forgery Authentic or the Work of a Master Forger?

Prof Edward Hall, Oxford University, said “There was a million pound business in making forgeries during the fourteenth century. **Someone just got a bit of linen, faked it up and flogged it.**”



But If The Shroud Is Authentic

... What Must Be True?





Features Unknown To An Artificer

- a crown of thorns like an Eastern crown more like a helmet
- nails show through the wrists
- details of a Roman scourging and the *flagrum*
- correspondence of burn holes and Pray codex
- discolorations consistent with a device to raise the shroud up from a box (the Constantinople device)
- halos around the blood visible in ultraviolet florescence where serum has separated from the blood.
- dirt from Jerusalem on nose, knees, and feet
- stitching characteristic of 1st century at selvedge





The Alternatives

More Than Several Reasons

Either the shroud is the burial cloth of Jesus Christ or it is a brilliant work of human artifice which manages to:

1. Produce a **negative image** with three dimensional information encoding,
2. Be **medically accurate with real blood flows** and wounds placed precisely
3. Prior to the image being **produced without pigments** of any kind.
4. The cloth incorporates **pollens unique to areas** consistent with the travels implied if the shroud were authentic,
5. And contains **dirt** that is identical to similar unique travertine **from the streets of Jerusalem**
6. And scourging and wounds **consistent with Roman crucifixion practices**,
7. And which contains blood flows **consistent with** those on the related **Sudarium of Oviedo** which is known from at least the 7th century and has blood of the same blood type



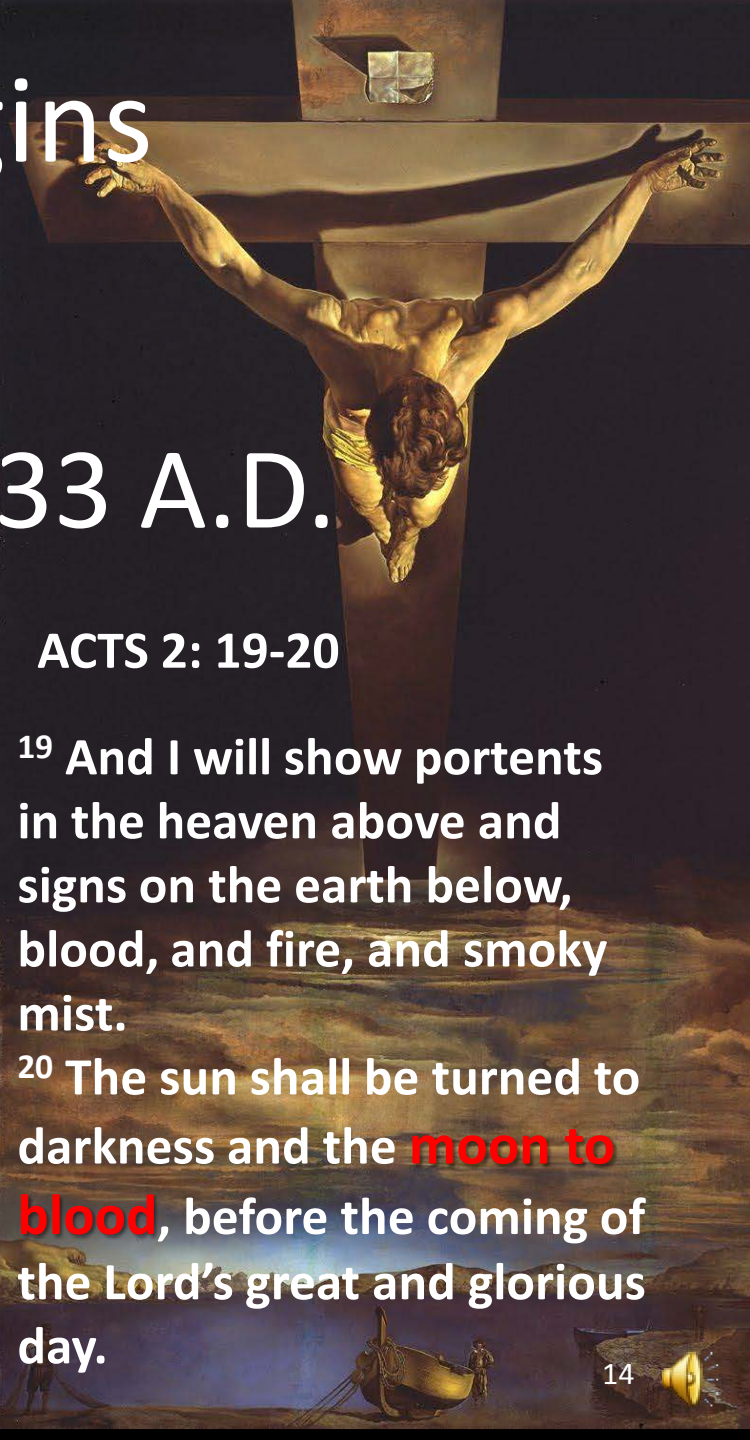


The Journey Begins



lunar eclipse at sundown

April 3, 33 A.D.



ACTS 2: 19-20

¹⁹ And I will show portents in the heaven above and signs on the earth below, blood, and fire, and smoky mist.

²⁰ The sun shall be turned to darkness and the **moon to blood**, before the coming of the Lord's great and glorious day.

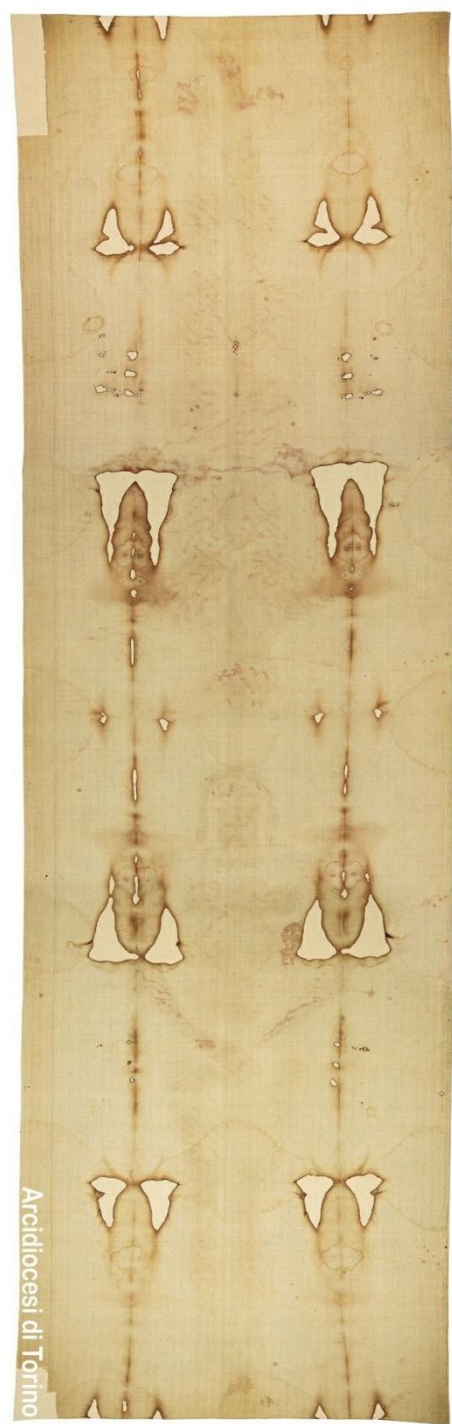


1. Scripture and the Shroud

30 to 33 A.D. The Public
Ministry of Jesus of Nazareth

John 20:4-8

⁴ The two were running together, but the other disciple outran Peter and reached the tomb first. ⁵ He bent down to look in and **saw the linen wrappings lying** there, but he did not go in. ⁶ Then Simon Peter came, following him, and went into the tomb. **He saw the linen wrappings lying there,** ⁷ **and the cloth that had been on Jesus' head, not lying with the linen wrappings but rolled up in a place by itself.** ⁸ Then the other disciple, who reached the tomb first, also went in, and **he saw and believed;** © 2014 R. Schneider





Missing Cloths?

- A *sindon* (shroud) to carry the body to the tomb
- A cloth to cover the top of the head of Christ in the tomb
 - Saint-Etienne Cathedral (located on the rue de Chantrerie in Cahors) is home to a museum of religious art. Its most interesting relic, called **the “holy cap” or “cap of Christ,” was brought to Cahors by Bishop Géraud de Cardaillac. Having returned from the Holy Land in the 12th century, the cap is said to have covered Christ’s head in his tomb.**

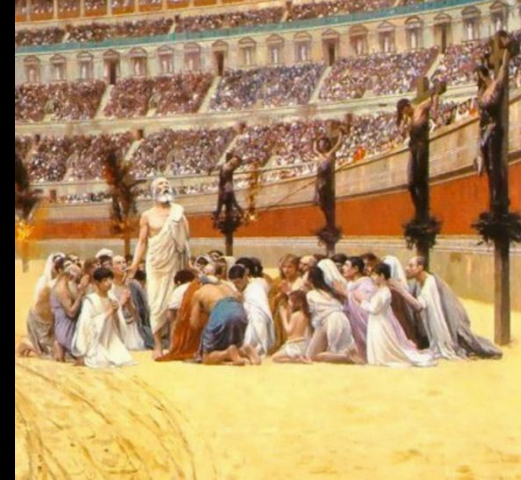
<http://gofrance.about.com/od/othercities/a/cahors-france.htm>

- The "vera icon" Veronica image (Where does that fit into the picture?)
- An image destroyed by the French Revolution at Besancon





Why The Silence? From the Coliseum to Constantine



- Small and Persecuted Community
- Burial Cloths Were Ritually Unclean
- The Shroud Contained an Image and Images Were Forbidden by Mosaic Law
- Revealing Its Existence Would Encourage Enemies to Try to Seize and Destroy It





2 The Abgar V Legend



- Linking the shroud to the Image of Edessa
 - The Only Major Image On Record
 - acheiropoietoe ("made without hands")
- Getting to Edessa: Two Schemes (Stories)
 - Ian Wilson's Abgar V Legend
 - Jack Markwardt's Antioch Journey





Ian Wilson's Chronology



30-33 A.D. Shroud **Carried to Edessa to Abgar V** by Thaddeus, one of the 72, disappears temporarily from history

(<http://www.newadvent.org/cathen/01042c.htm>)

525 A.D. **Rediscovered** hidden over the gate of Edessa **MANDYLION**

944 A.D. Transferred from Edessa to **Constantinople**

1204 A.D. **Disappearance** from Constantinople After The Sack of the City

1355 A.D. **Reappears** in Lirey, France

1453 A.D. Transferred to the House of Savoy

1578 A.D. Move to Turin

1983 A.D. Transferred to the Catholic Church on Death of Umberto II

SHROUD

* derived from Ian Wilson's presentation "Discovering More of the Shroud's Early History".





Jack Markwardt's Chronology



30-33 A.D. Crucifixion, Burial, and Resurrection of Christ

c. 40 A.D. Persecution drives **Peter to Antioch** with Passion relics

30 – 324 A.D. Passion Relics Concealed, church persecuted

324-337 A.D. Constantinian Era and **early Eastern Iconoclasm**

and imperial relic collection motivates continued silence



337-540 A.D. Post-Constantinian Era

357 A.D. Antioch becomes a stronghold of Arianism

362 A.D. Julian the Apostate attempts to seize Antioch's relics

Theodoretus hides them, including shroud, and is martyred

370-410 A.D. In the Theodosian era the Abgar legend begins

to speak of images and shroud like representations
of the face of Christ appear in the West

528 Earthquake destroys cathedral and **shroud is discovered** when
rubble is cleared away

540 **Shroud is evacuated to Edessa** in advance of the Persian attack





3. Images In Tradition

The Vignon Hypothesis



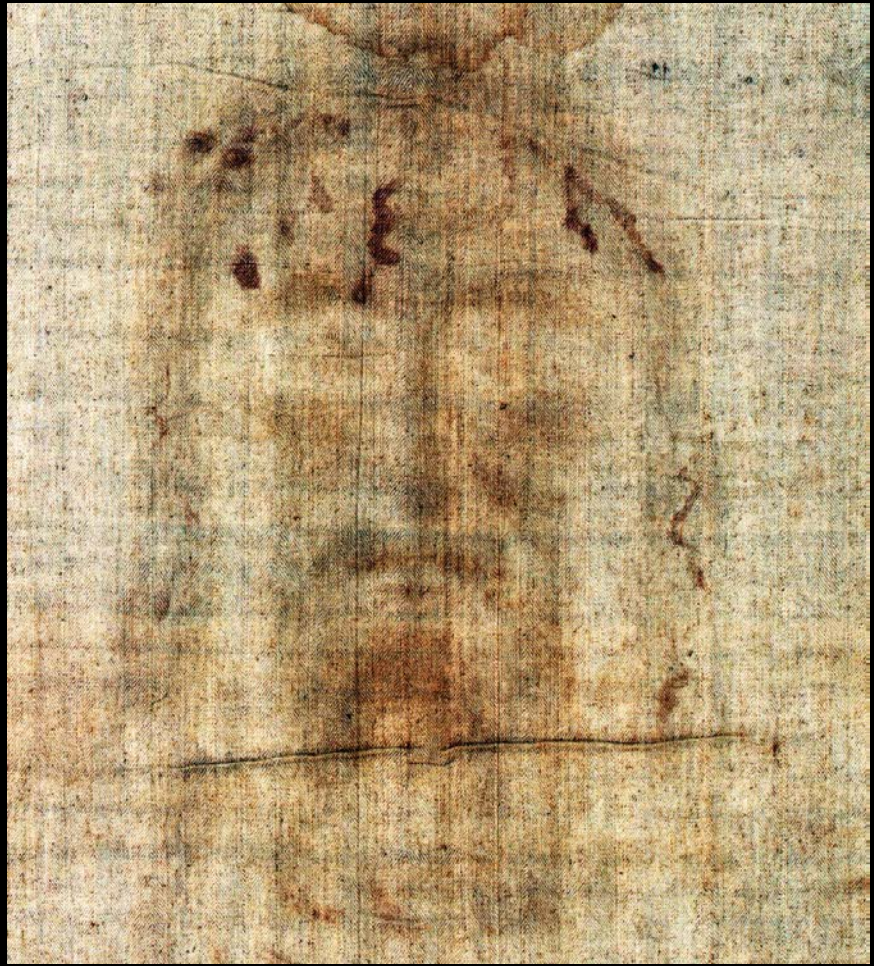
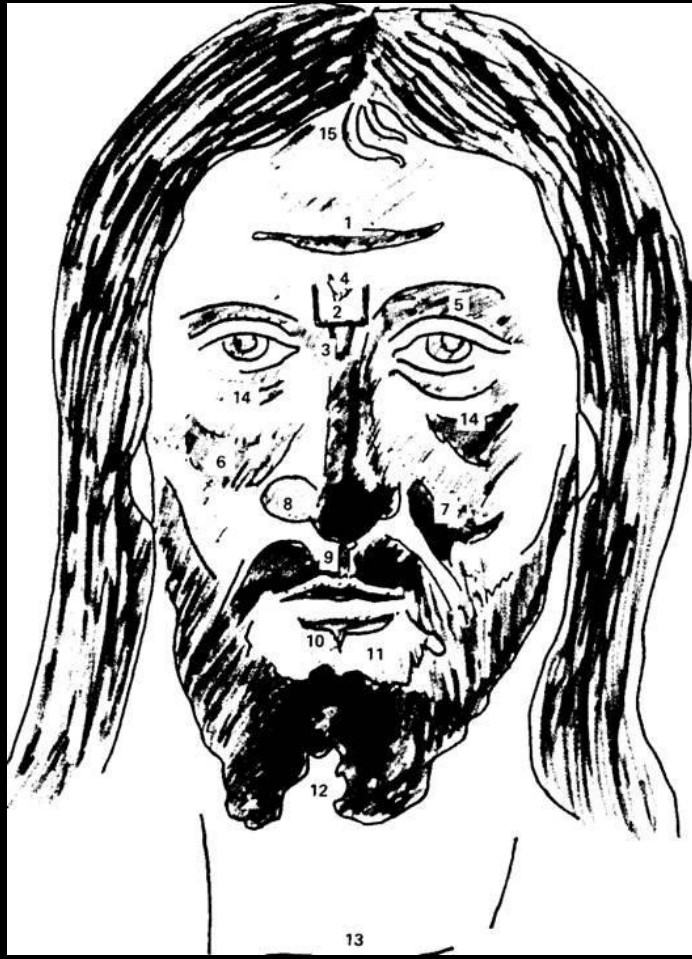
The Vignon markings — Byzantine artists faithfully reproduce markers motivated by the Shroud image.

- (1) Transverse streak across forehead,
- (2) three-sided "square" between brows,
- (3) V shape at bridge of nose,
- (4) second V within marking 2,
- (5) raised right eyebrow,
- (6) accentuated left cheek,
- (7) accentuated right cheek,
- (8) enlarged left nostril,
- (9) accentuated line between nose and upper lip
- (10) heavy line under lower lip,
- (11) hairless area between lower lip and beard,
- (12) forked beard,
- (13) trans-verse line across throat,
- (14) heavily accentuated owlsh eyes,
- (15) two strands of hair



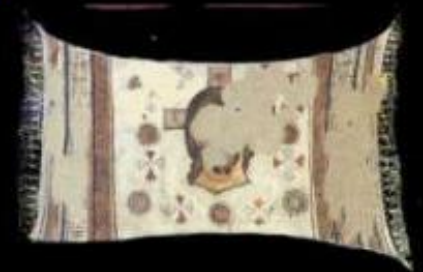


Diagram of the Vignon Markings





The Variety of Depictions of the Image of Edessa



* image used by Ian Wilson in presentation "Discovering More Of The Shroud's Early History"





4. Cloth of Oviedo (The Other Cloth)



**Left Palestine in
614 A.D. to
escape Persian
Army Arrived in
Spain about
618? Cataloged
14 March 1075**





Match With The Sudarium



© 1998
CSST





5. The Movements of the Shroud

Travels of the Shroud and Sudarium





6. Some Ancient Witnesses

4th Century — Eusebius (c. 260-340 AD) **NO IMAGE MENTIONED**

- relates the story of Abgar V's message to Jesus but makes no mention of an image

Painted Image with Choice Paints

- Late 4th or Early 5th Century (c. 400 AD) — Doctrine of Addai
 - When Hannan, the keeper of the archives, saw that Jesus spake thus to him, by virtue of being the king's painter, he took and painted a likeness of Jesus with choice paints, and brought with him to Abgar the king, his master. And when Abgar the king saw the likeness, he received it with great joy, ...
- The Acts of Thaddaeus (Surviving Greek Text from 6th Century)
 - ... Ananias, having gone and given the letter, was carefully looking at Christ, but was unable to fix Him in his mind. And He knew as knowing the heart, and asked to wash Himself; and a towel was given Him; and when He had washed Himself, He wiped His face with it. And His image having been imprinted upon the linen, He gave it to Ananias ...

acheiropoietoe ("made without hands")

- 6th Century — Mozarabic Rite (Preface for Saturday of Holy Week
 - *Peter ran with John to the tomb and saw the recent imprints of the dead and risen man on the linens.*
- 6th Century — Evagrius (c. 535- ?) History published about 593 AD
 - gives an account of how the image sent to Abgar saved the city during the siege of Chosroes the Persian in 544 AD

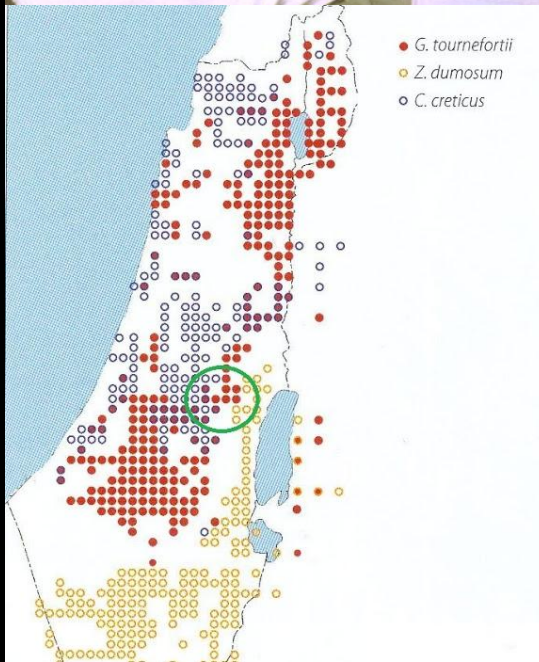


Max Frei Pollen Data



Identified 49 species of plants represented in the dust of the shroud *

- Half did not grow in Europe
- 29 were plants of the Near East
- 21 grow in the desert or the steppes
- 13 characteristic of the Negev and the Dead Sea



"I leave the possibility open that a part of the pollen comes from **the manufacture of the cloth** and perhaps also **from aromatic substances such as aloe** used for the burial processes or from the wet skin of the body which was wrapped in the cloth."

* Shroud Spectrum International #3 (1982)





Electron micrograph of pollen grains of *Gundelia tournefortii* (at left), which grows only in Israel, Jordan and Syria, yet is by far the most common pollen found on the shroud.



The pollen below is *Helichrysum* and not *Gundelia* and most likely due to use in anointing the body

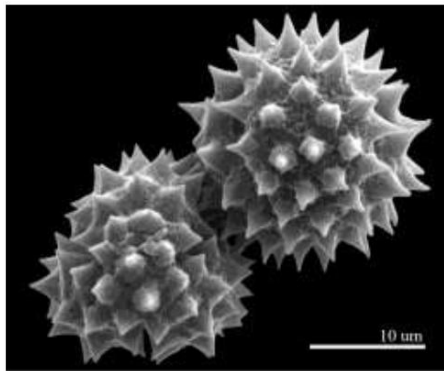


Fig. 10 *Helichrysum* spp.

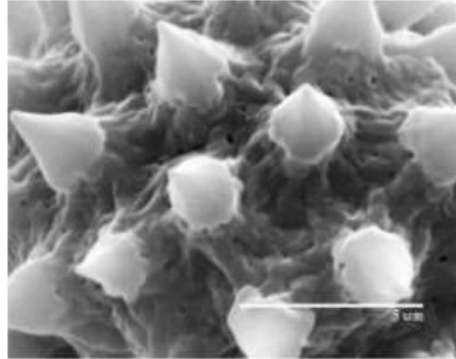


Fig. 11 *Helichrysum* spp.



Fig. 6 *Helichrysum* spp.



Part of the conclusion from Dr. Marzia Boi's paper at Valencia 2012

The study of Danin *et al.*, (1999) tests that the most common species of the 204 identified pollen in order of abundance are *Gundelia*, *Cistus*, *Cistaceae*, and *Apiaceae*. The *Gundelia* species would be erroneously identified, being *Helichrysum* spp. The unpublished identification of the most abundant pollen in the relic as *Helichrysum*, clarifies the fact that had not considered before: the possible preparation of the body and the funeral ritual with oils and ointments.





Marzia Boi explains **the main pollen residue comes neither from *Ridolfia*, nor *Gundelia*, but from *Helichrysum* (29.1%)**. Cistaceae pollen (8.2%), Apiaceae pollen (4.2%) and Pistacia pollen (0.6%) are also present on the shroud in smaller quantities. “All the plants mentioned here are entomophilous (i.e. insect borne) [<http://tinyurl.com/ovasvpl>]

This means that they were deposited likely either by the linen fabrication process or by being included in material applied to the body or the shroud like oils or unguents used to dress or anoint the body.



FlowersInIsrael.com

Carduus argentatus* and not *Gundelia tournefortii

according to Bonn University Prof. Thomas Litt

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Helichrysum

30



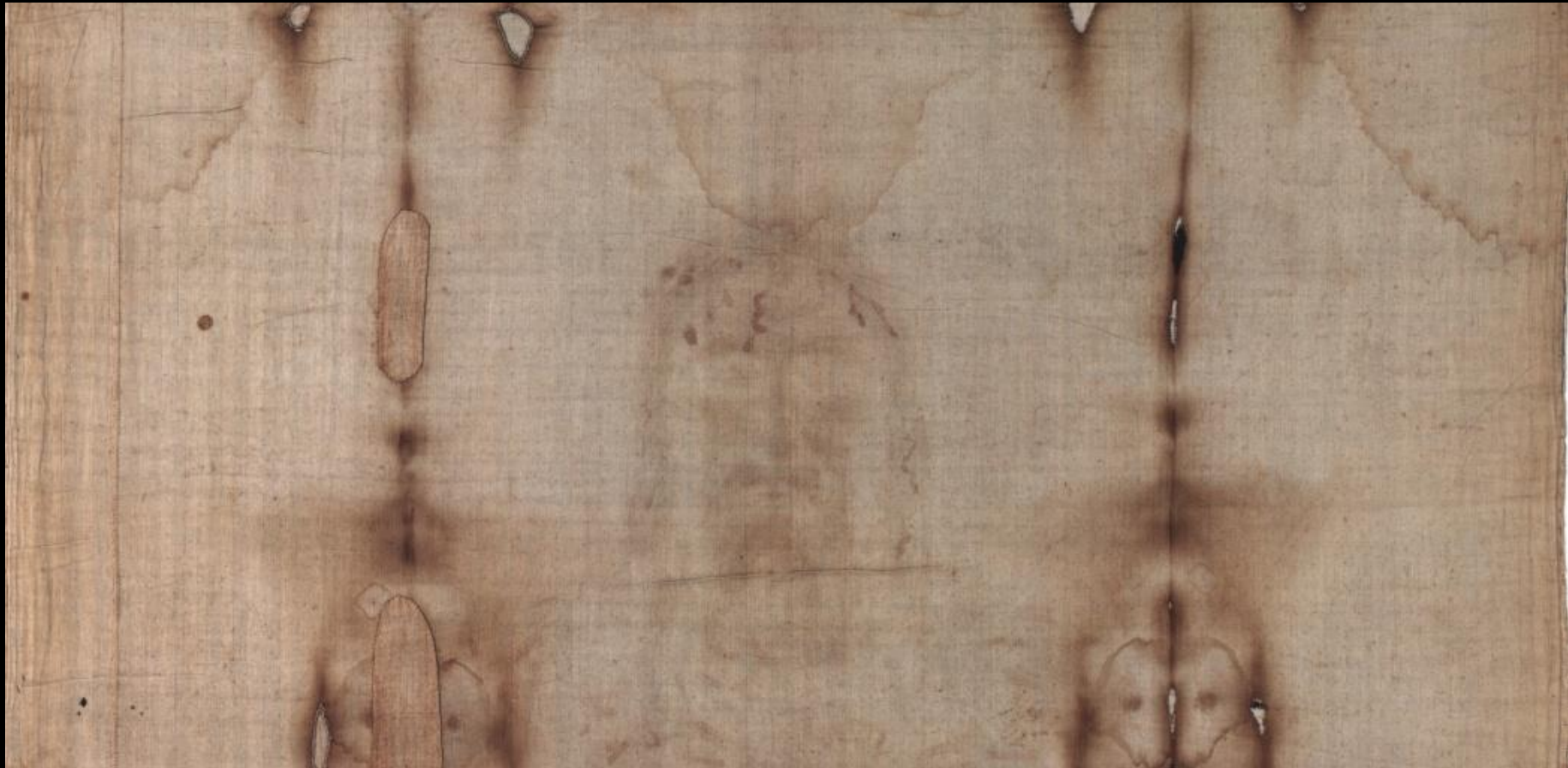


544 A.D. Mandyllion Saves Edessa From The Persian Attack

Reported in *The Ecclesiastical History of Evagrius — A History of the Church from AD 431 to AD 594* in Chapter XXVII describes how the image of Edessa was invoked to cause a Persian siege engine to be set on fire thus repulsing the Persian attack.

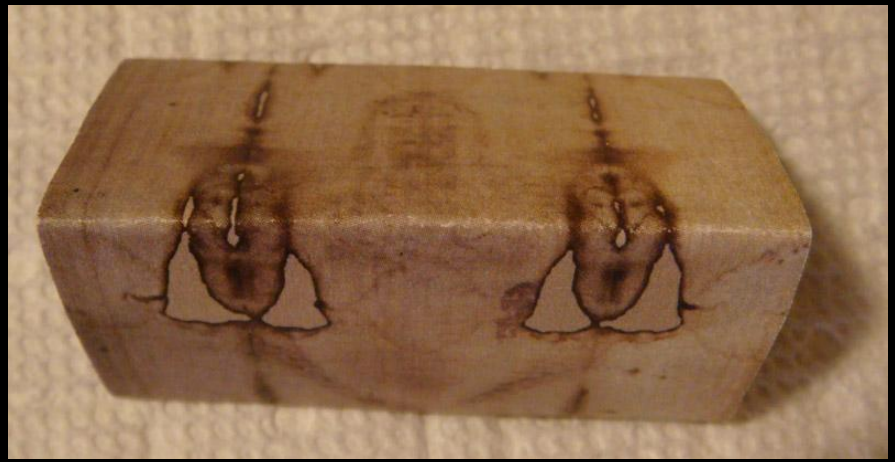
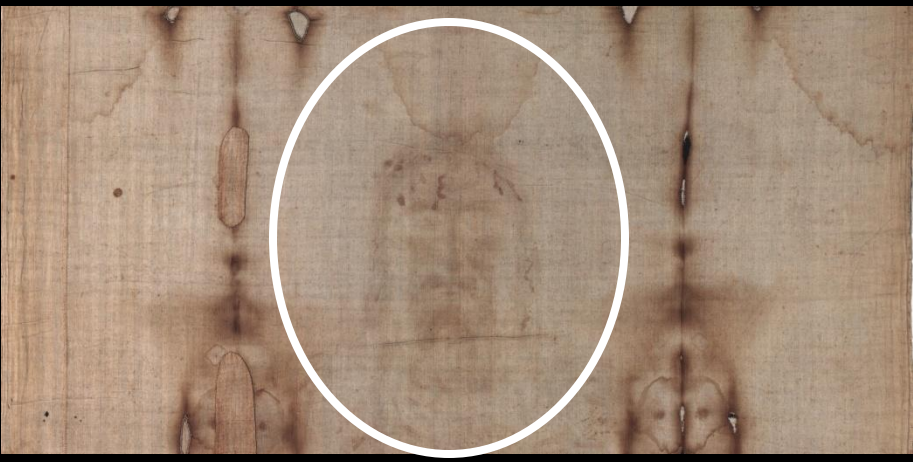


Shroud Folded As The Mandylion Tetradiplon: Folded In Four





Tetradiplon



See also <http://shroud3d.com/findings/the-halo-around-the-head>



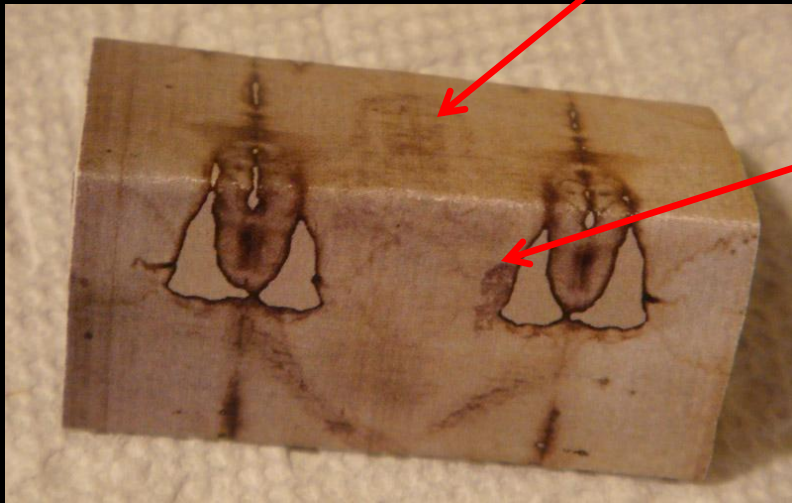


7. Saving The Shroud In 943-944

8. The Gregory Sermon August 944 A.D. at Hagia Sophia



“The splendor has been impressed uniquely by **the drops of agony sweat sprinkled from the face...These are truly the beauties that produced the coloring of Christ’s imprint, which has been embellished further by the drops of blood sprinkled from his own side...blood and water there, sweat and image here.**”



The Mandylion Revealed to Be More Than Just The Face of Christ





9. A Witness At Constantinople

- Robert de Clari, chronicler of the 4th crusade described the shroud he saw in 1203 with these words:
 - "... there was another church [lit. another of the churches] which was called My Lady Saint Mary of Blachernae , where there was the SYDOINES in which, [lit. where] Our Lord had been wrapped, which every Friday, raised itself upright, so **that one could see the form of our Lord on it** [lit. there], and no one, either Greek or French, ever knew what became of this SYNDOINES when the city was taken." *

* translation from Old French by Peter F. Dembowski

<http://www.shroud.com/pdfs/ssi02part5.pdf>

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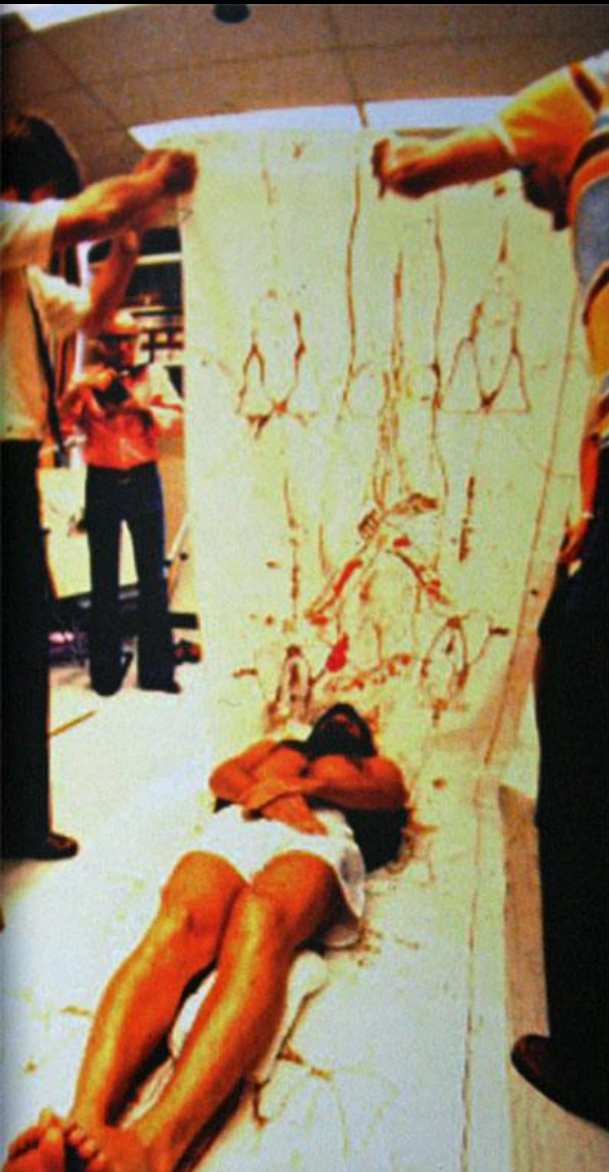
A Cloth-Wrapped Body Topology of the Shroud

c. 1974 to 1976

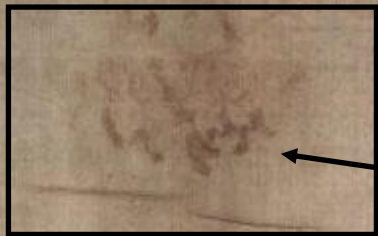
John Jackson and Eric Jumper, two young Air Force Captains investigate the Shroud.

They concluded that the image is consistent with a cloth wrapped body.

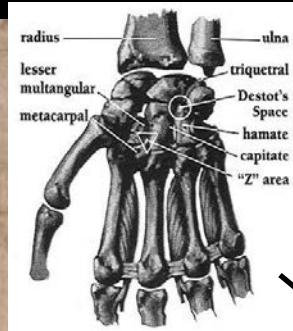
Jumper says, "There is only one way to correctly wrap the body."



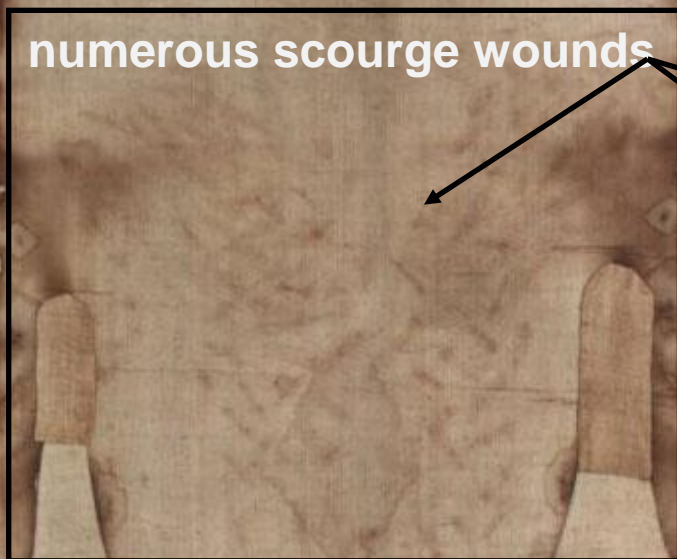
Tell-Tale Wounds



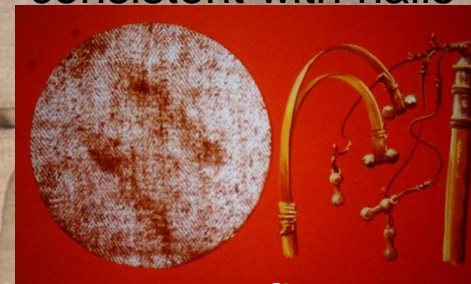
head wounds
Crown or Cap of Thorns



chest wound
consistent with
spear thrust



wrist wound
consistent with nails



Roman flagrum



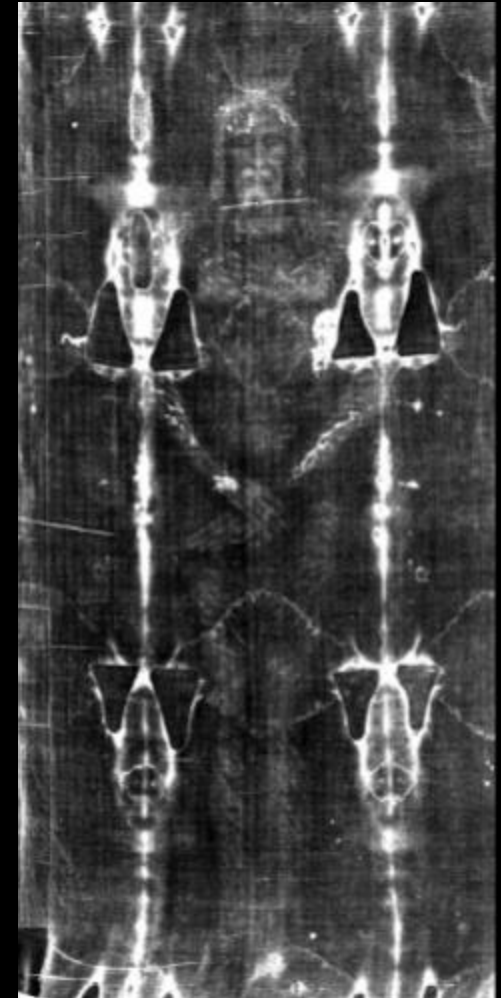
blood and serum flow across the back

foot wounds
consistent with nails





The Image Is A Negative *

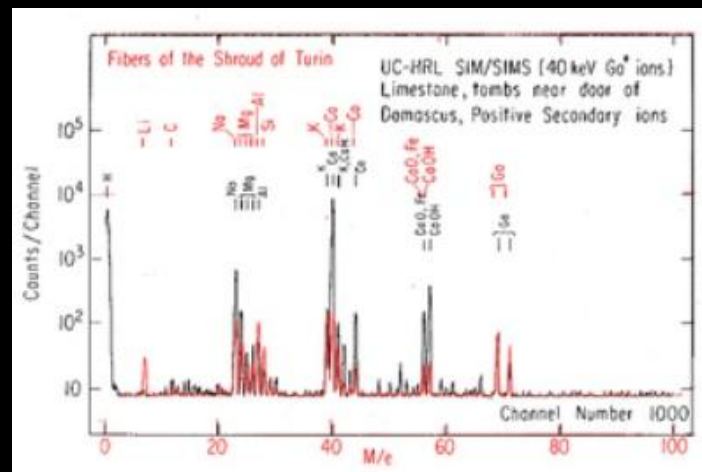
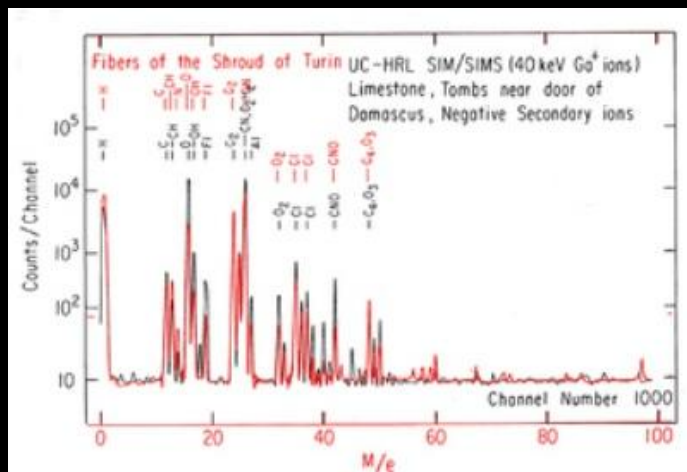


* some critics point out that it isn't actually a photographic negative
only acts like one in some ways





Rare Travertine Aragonite



- Rare Calcium Carbonate Form Found on Nose, Left Knee, and Heel Matches Samples from Jerusalem
- Dr Ricardo Levi-Setti (University of Chicago) compared shroud sample with samples collected in Jerusalem using high resolution scanning ion microprobe observing an excellent match





The Scourging and Crucifixion

Scourging Depiction Derived From The Shroud by

Giulio Ricci



Area of Abrasion
from Carrying
the Patibulum
(Crossbeam)



Blood on frontal image
(enhanced)
from "The Real Face of
Jesus" documentary
by Ray Downing





Iconoclasm Down The Centuries

- Silences in the matter of images is necessary to protect them in times of iconoclasm
 - Jewish Iconoclasm (esp. King Hezekiah c. 715 and 686 BC purged Solomon's Temple and caused the Nehushtan to be destroyed)
 - Synod of Elvira (305/6 AD) pre-ecumenical council forbade images in churches
 - Destruction of Pagan Images post Constantine
 - Threats of Destruction From Muslim Conquests
 - Byzantine Iconoclasm (726-787 AD) and (814-842 AD)
 - Protestant Reformation (desecrated many churches)
 - French Revolution (destroyed Besancon Image)

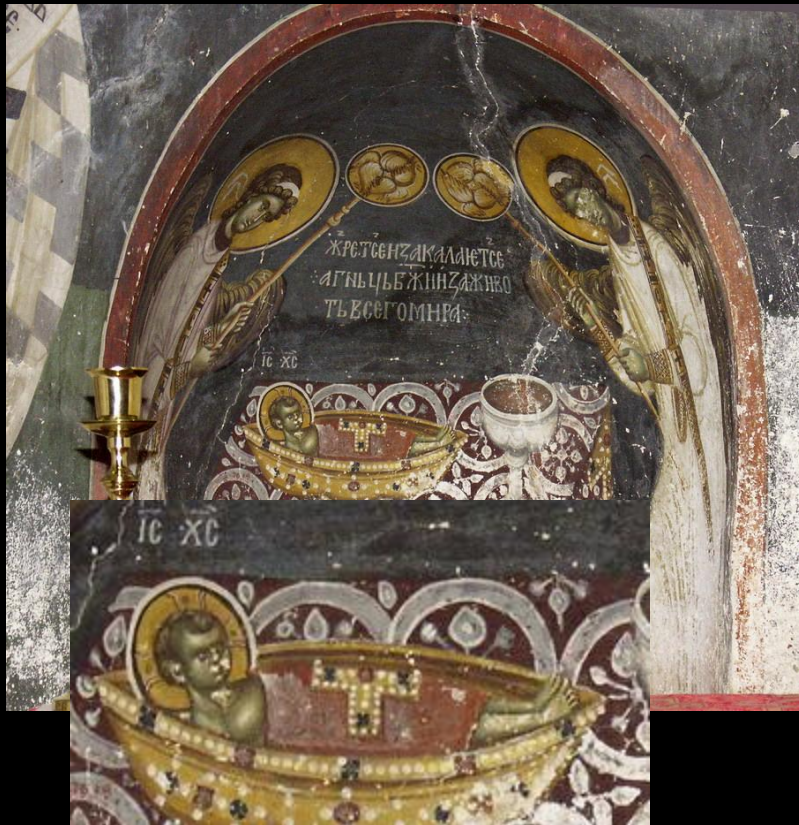




10.1 Melismos, Threnos, Epitaphioi



- Traditions motivated by the shroud?
- Later A Memory In The East after the shroud was lost?



c. 1192 Earliest Preserved Melismos (μελισμος) Mural at Kurbinovo, Monastery of St. George in Macedonia





10.2 Threnos, Epitaphioi, and the Man of Sorrows



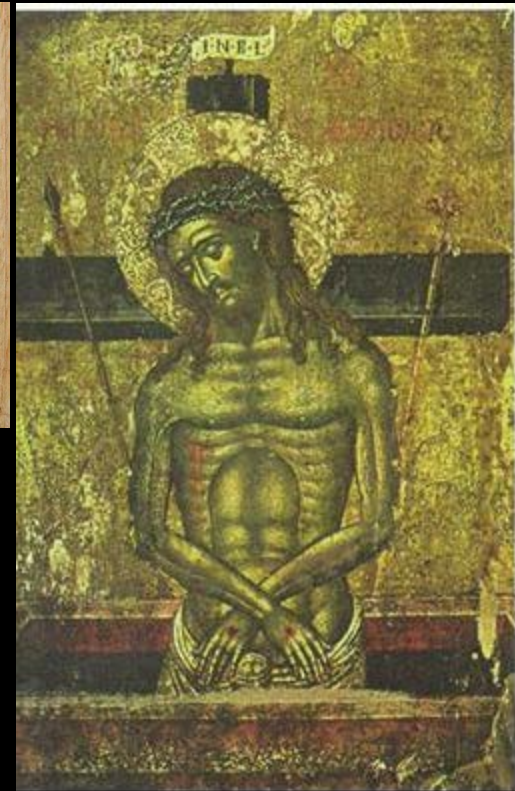
An Echo Of The Shroud And A Religious Ritual?

Citation from oldest Latin Abgar legend account likely 10th century *

•JOSEPH OF ARIMATHEA, THE HOLY GRAIL, AND THE EDESSA ICON by Dr. Dan Scavone
<http://www.shroud.com/pdfs/n56part3.pdf>



detail from early 12th century ivory carving



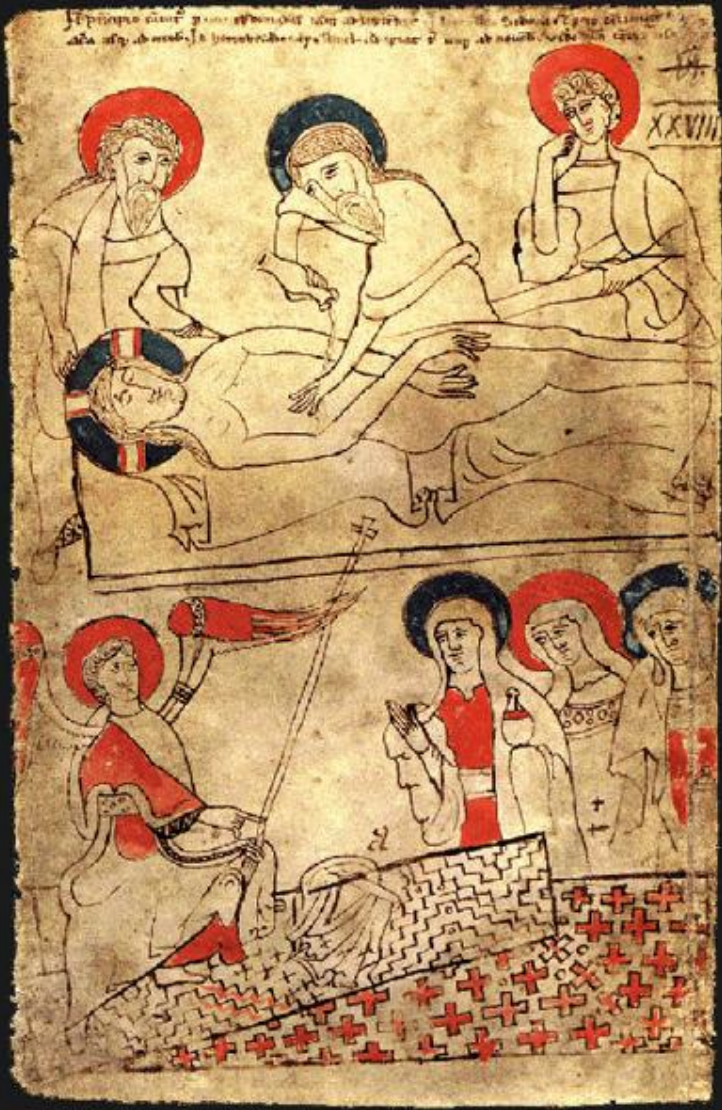
Man of Sorrows

... on Easter it used to change its appearance according to different ages: it showed itself in infancy at the first hour of the day, childhood at the third hour, adolescence at the sixth hour, and the fullness of age at the ninth hour, when the Son of God came to His Passion ... and ... cross

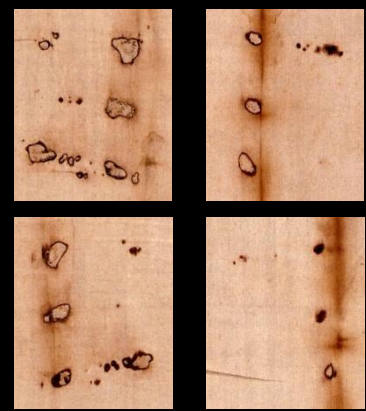




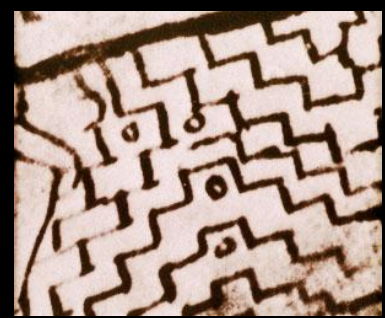
11. Pray Codex 1192-1195 A.D.



Pray Codex contains crossed thumb-less hands, a pattern like a herring bone twill and markings that look like the burns on the shroud

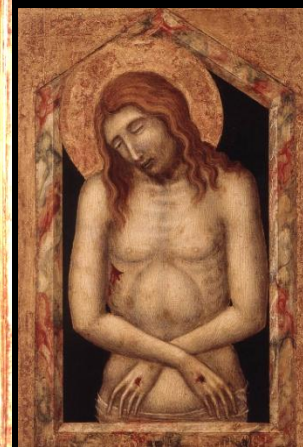


the pre-1532 shroud burns





12. The Constantinople Device



Robert de Clari, chronicler of the 4th Crusade said that at the church of St. Mary of Blachernae "... where there was the shroud in which Our Lord had been wrapped, which every Friday raised itself upright, so that one could see the figure of Our Lord on it. ... no one, either Greek or French, ever knew what became of this shroud when the city was taken."

Stills from BBC video posted to YouTube "Shroud of Turin - BBC - New Evidence"





Three Dimensional Image

VP-8 Image

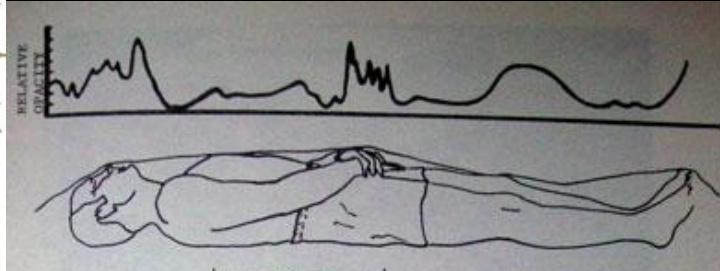
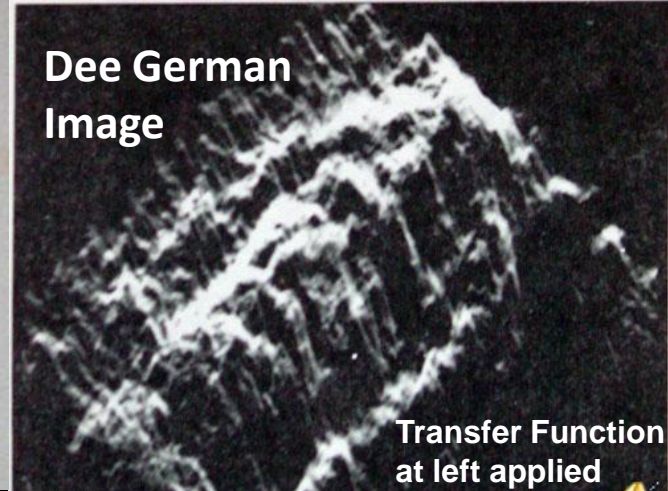
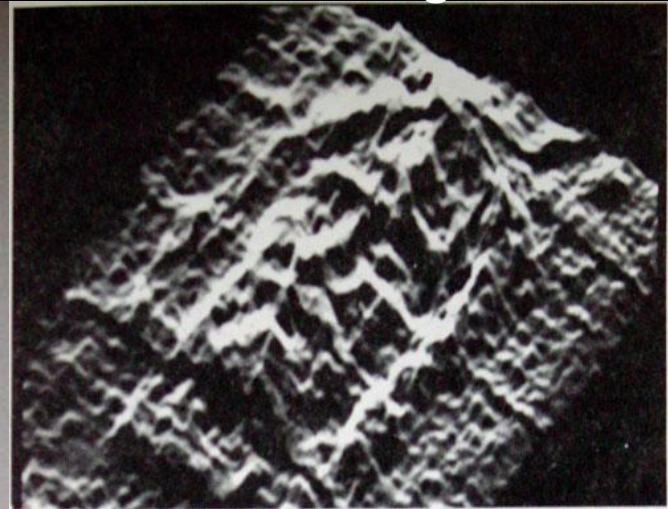
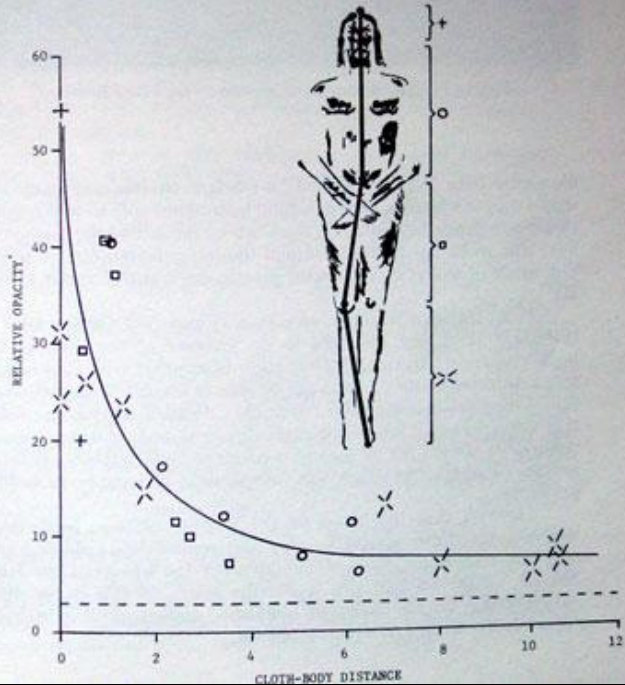


Figure 20. Relative positions of the ridge line of the cloth and the body profile below. Image intensity scan shown above figure.



Dee German Image

Image encodes cloth to body distance with extinction at nominally 4 cm.

Transfer Function at left applied to Shroud





13. Constantinople To Europe

- Othon de la Roache and the Knights Templar
- Two narratives each with its recommendations

Othon de la Roche



Arms of Geoffrey de Charny
and Jeanne de Vergy

Knights Templar



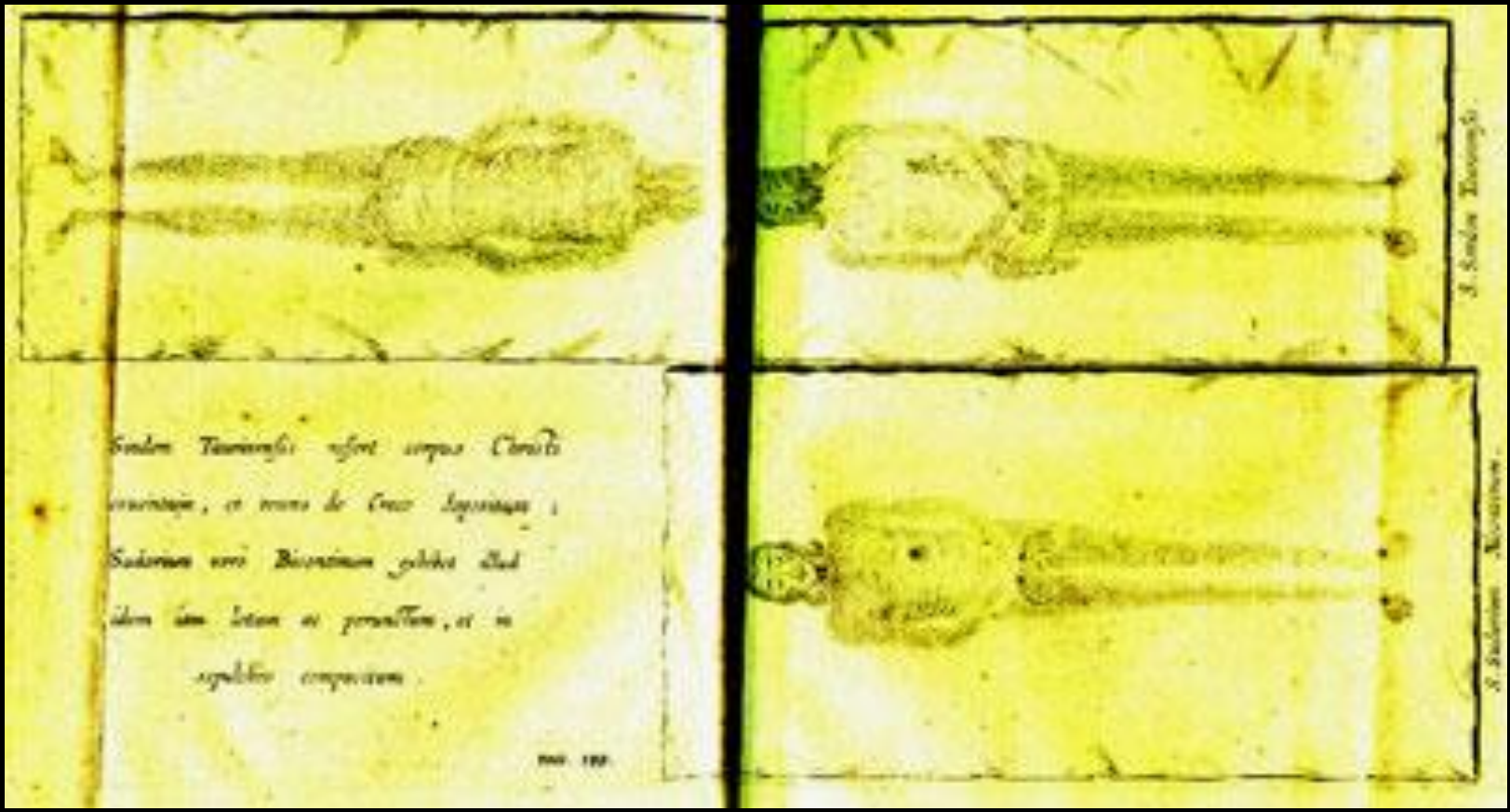
the Templecombe portrait





14. The Shroud Appears In The West

17th Century Drawings Comparing Besancon Shroud to The Shroud of Turin





15. Carbon Dating

How does the science work?

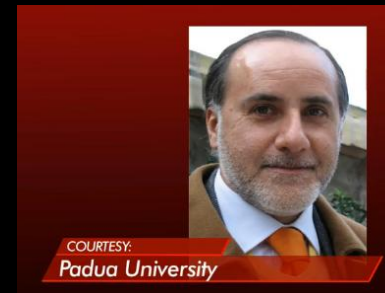
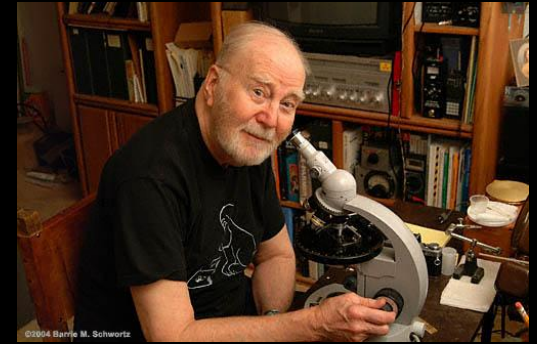
- The Assumptions That Have To Be True
 - Must know the amount of C14 originally in the sample
 - Sample must be representative of the object being dated
 - There must be no contamination from more contemporary materials containing carbon
 - There must be no selective enrichment mechanisms (ex. radiation, etc.) that would skew the C14 content.
- We have seen earlier that something was wrong with the measurement because of unknown factors
- Are there any alternatives?





16. Alternate Dating Methods

- **Vanillin Extinction (Ray Rogers)**
 - Vanillin is a compound associated with lignon at growth nodes that slowly disappears with time. The shroud proper does not give a test for vanillin while the C14 region does. Demonstrates C14 region is anomalous and shroud is likely older than 1300 years even if stored in very warm environments.
- **Three Mechanical Tests Developed by Giulio Fanti together with others.**





Three New Dating Methods



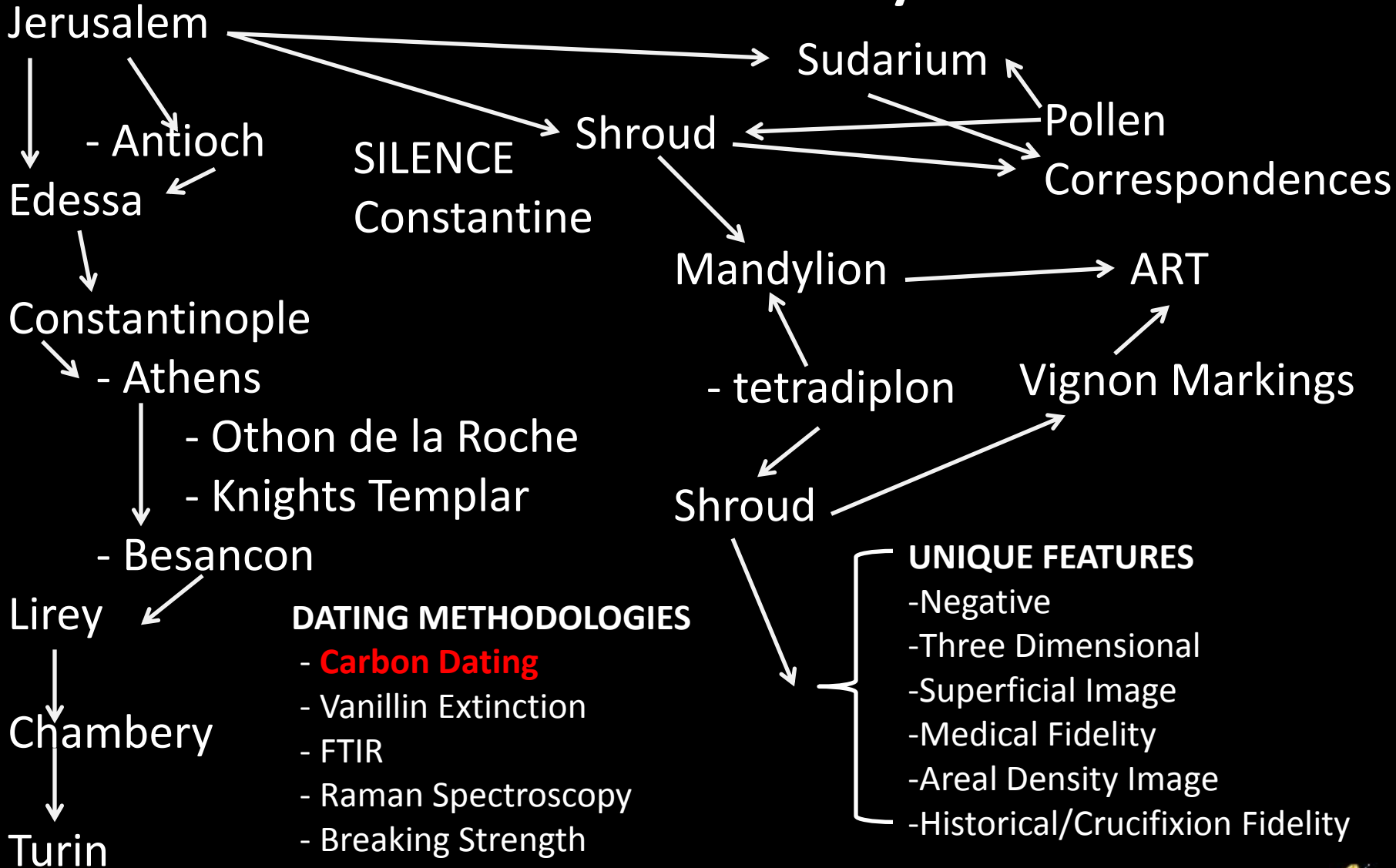
COURTESY:
Padua University

- Three Independent Tests Developed by Italian Researcher Giulio Fanti and associates, based on FTIR, Raman, and combinations of cellulose degeneration, breaking strength, and torsion
 - nine ancient fabrics used in compiling the calibration curves: 3000 B.C. to 1000 A.D.
 - 5 from Egypt, 3 from Israel, 1 from Peru
 - plus two modern fabrics of recent manufacture
 - Fourier Transform Infrared (FTIR) : 300 BC \pm 400
 - Raman spectroscopy : 200 BC \pm 500
 - Multiparameter Mechanical : 400 AD \pm 400
 - Combined and Considered Jointly: 33 BC \pm 250





17. Plausibility





18. Summing Up



- Summary and Conclusions
 - The scales of truth as measured by overall coherence and intelligibility say:
 - There is something wrong with the Carbon 14 result
 - The sheer coherence of the shroud story and the interlocking evidence shows that it is far older than the Carbon 14 result
 - The most obvious solution is that the shroud actually is the burial cloth of Jesus of Nazareth



A Plug For STERA and a Thank you to Barrie Schwartz



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References

