

“What Is Carbon-14 Dating?”

What exactly is carbon 14 testing and what are its limitations? I will be explaining this to 7th graders.

Carbon 14 dating essentially tests how long something has been dead. In the atmosphere solar radiation transforms a predictable number of nitrogen atoms into radioactive carbon (carbon 14). Carbon 14 then becomes incorporated into carbon dioxide which is taken up by plants and used to produce sugars by photosynthesis. The carbon then moves up the food chain from herbivores to carnivores. Normal carbon is carbon 12. Therefore there is a constant ratio of carbon 12 to carbon 14 in the atmosphere and consequently in living things. There is a far greater abundance of carbon 12 than carbon 14 and the radiation is a very low level and is not hazardous in and of itself. When a creature or plant dies, the inflow of carbon 14 stops and decay begins. After 5,568 years half of the carbon 14 has reverted back to nitrogen. This is referred to as the half-life. Therefore, after every 5,000+ years, there is half-again the amount of carbon 14. Usually after 10 half-lives there is not sufficient carbon 14 left to measure. The limit of carbon 14 then is about 50,000 – 60,000 years.

This dating method is based on some crucial assumptions that are difficult to verify. First, it assumes that the rate of transformation of nitrogen to carbon 14 in the atmosphere is constant through time. It turns out that this has not been the case and scientists have found greater/lesser abundances of carbon 14 in times past yielding dates that are too young or too old respectively. Second, it assumes that there is no other source of carbon 14 in living things which has not been investigated very thoroughly.

Another complication has been recent reports that indicate that supposedly ancient sediments are producing trace amounts carbon 14 where there should be none at all. By ancient I mean

sediments that are traditionally dated as being millions of years old. (see www.icr.org/research and click on the article "Measurable C14 in Fossilized Organic Materials." Either the c14 dating method is worthless or these sediments are nowhere near as old as suspected.

Hope this helps.

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Probing the Shroud of Turin

The Gospels and the Shroud

Few historical artifacts generate as much heated controversy as the Shroud of Turin. Some claim it is merely a clever painting; a forger's work of art.^{1} Others think it might be the actual burial shroud of Jesus.^{2}

The Shroud is a linen cloth 14.25 feet long by 3.5 feet wide. On its surface is the image of a man who appears to be a Jewish crucifixion victim. Could this be Jesus of Nazareth? While some researchers reject this idea as fanciful, others believe the weight of available evidence points to just such a remarkable conclusion.

In this article we will examine evidence both *for* and *against* the claim that the Shroud of Turin is the actual burial garment of Jesus. My goal is simply to present the evidence. I will leave the verdict to the reader. But where should we begin our inquiry?

If we want to find out if the Shroud may have been the actual

burial garment of Jesus, a good place to begin is with an examination of the Gospel accounts of Jesus' death. After all, if the evidence on the Shroud is *not* consistent with the Gospels, we can safely conclude that *whatever* the source of the image, it could not be that of Jesus. So how well do the Gospel accounts line up with the image on the Shroud? Are there any obvious inconsistencies or contradictions?

Actually there is remarkable agreement between the two. The Gospels say that Jesus was scourged,^{3} crowned with thorns,^{4} and crucified.^{5} The man's image on the Shroud likewise gives evidence of one who suffered such things. In addition, John's Gospel says that the legs of those crucified with Jesus were broken. However, when the soldiers saw that Jesus was already dead, rather than break His legs they "pierced His side with a spear."^{6} Careful examination of the Shroud again reveals consistency with the Gospels on this point. Like Jesus, the man's legs were not broken, but his side appears to have been pierced with a spear.

Of course different researchers interpret such parallels differently. Kenneth Stevenson, a Christian researcher, views such consistency as an important link in determining whether the image might be that of Jesus. But Walter McCrone, a humanistic scientist who rejects miracles, contends that the Shroud is simply a medieval artist's painting.^{7}

While the different philosophical commitments of Stevenson and McCrone may have influenced their interpretations of the data, we must still ask which interpretation is correct. Does the Shroud image depict an actual crucifixion victim or is it rather an ingenuous painting? We will address this question next.

The Shroud under a Microscope

One of the most qualified researchers to contend that the Shroud of Turin is merely a painting is Walter McCrone. An

expert microscopist and member of the American Academy of Forensic Sciences, McCrone has “examined several hundred paintings, by artists from Giotto to Pollock” in order to determine their authenticity.[{8}](#) He sums up his own examination of the Shroud this way, “From my experience as a painting authenticator, the shroud is authentic—a beautiful and inspired authentic painting.”[{9}](#)

McCrone reached this conclusion after examining thirty-two sticky tape samples taken from both image and non-image areas on the Shroud. He later wrote, “I identified the substance of the body-and-blood images as the paint pigment red ochre. . . . The blood image areas consist of another pigment, vermilion, in addition to red ochre. . . . These paints were in common use during the Middle Ages”.[{10}](#)

These statements give the impression that a careful analysis of the Shroud conclusively demonstrates the image to be merely a painting. However, it’s only fair to note that virtually all of McCrone’s statements are hotly disputed by other, equally competent, pro-Shroud researchers!

For instance, McCrone tested for blood on the Shroud and claimed to find none.[{11}](#) But Professor Alan Adler, a highly skilled chemist, states that the stains on the shroud were from blood.[{12}](#) Also, as previously mentioned, McCrone thinks the Shroud image was produced with various paint pigments. But Kenneth Stevenson notes that the primary statement to which the Shroud of Turin Research Project publicly agreed was that “the image is the result of some cellulose oxidation-dehydration reaction rather than an applied pigment.”[{13}](#) Finally, although Alan Whanger admits that threads were obtained from the Shroud which *did* have the red ochre pigment observed by McCrone, he claims that these are merely “translocated fibers” from the many copies of the Shroud “that were painted during the Middle Ages.”[{14}](#) According to professor Whanger, such copies “were laid face down . . . on the shroud” and therefore “have nothing to do with the

formation of the shroud images.”{15}

Finally, Dr. Max Frei claimed to have “identified key pollens that definitely placed the Shroud in both Palestine and Turkey at some time in the past.”{16} Of course, this observation is quite difficult to square with the theory that the Shroud has never been outside of Europe! But McCrone accuses Frei of deception and states, “There were very few pollen grains on his tapes (I examined them very carefully).”{17}

So which expert should one believe? As we’ll see, the complexity of this question is increased when one considers rival views of the Shroud’s history.

Rival Histories of the Shroud

Both Gary Vikan and Walter McCrone maintain that there is no reliable evidence for the Shroud of Turin prior to the year 1356.{18} Kenneth Stevenson, relying on the work of Ian Wilson, believes the Shroud’s history might be reconstructed all the way back to the 1st century!{19} So who’s right?

Most scholars agree that the Shroud only became widely known in 1357 when it was exhibited in Lirey, France. Those who think the Shroud is merely a 14th century painting cite Bishop Henri of Poitiers’ claim that he actually knew the artist!{20} But those who think the Shroud is older suggest that he may have only been referring to one of the medieval *copies* of the Shroud. These researchers attempt to reconstruct the Shroud’s history via the Mandylion, an ancient cloth supposedly imprinted with the facial image of Christ. They observe that historical descriptions of the Mandylion bear similarity to the image on the Shroud. But what do we know of the Mandylion’s history?

It is alleged that Abgar V, a 1st century ruler of Edessa, sent a letter to Jesus requesting healing from leprosy. After Jesus’ death and resurrection, a disciple came to Edessa with

a cloth “imprinted with the Savior’s image.”[\[21\]](#) Seeing the cloth, Abgar was cured and Christianity took root in the city.

Although there may be legendary elements in this story, certain historical facts *do* underlie it. For instance, Abgar V was ruler of Edessa and tradition links the early evangelization of the city to “a holy image of the Lord.”[\[22\]](#)

In 525 the Mandylion was discovered in the walls of Edessa. It was probably hidden there at a time when Christians were being persecuted. In 944 it was taken to Constantinople, but was lost again when the city was sacked in 1204. Later, in 1357, the Shroud was publicly displayed in France. Ian Wilson speculates that the Mandylion and the Shroud are the same object. He suggests that between 1204 and 1357 the cloth was secretly kept by the Knights Templars. If Wilson is correct, a case can be made for dating this cloth to the 1st century.

But there’s a problem. The Shroud is a full-body image; the Mandylion was only a facial image. Wilson, however, thinks the Mandylion was probably folded so that only the face was visible. He may be right. Careful photographic analysis reveals that the Shroud may once have been folded as Wilson describes. But this is uncertain.

While other difficulties could be mentioned, the primary problem with a 1st century date for the Shroud is the conflict with its radiocarbon date of about 1325. We will examine this next.

Carbon 14 An Insurmountable Objection?

In 1988 three laboratories received samples of the Shroud of Turin to be tested with the carbon 14 dating method. The results indicated that the Shroud was a medieval artifact and its date was set at 1325 +/- 65 years. This date is generally considered to be about 95 percent reliable. Thus for many researchers the issue is settled: the Shroud is a medieval

relic.

But why isn't everyone convinced? Why do a number of researchers contend that this date may be in error? The chief reason for skepticism concerns the nature and quality of the samples tested. John McRay, a respected scholar and archaeologist, notes that "there is a high probability of sample contamination" which can undermine the carbon 14 dating method.{23} Other scholars have offered a number of reasons why such sample contamination may have affected the dating of the Shroud.

For instance, Kenneth Stevenson notes that the samples were taken from an area of the Shroud just "two to three centimeters from a repair site due to the 1532 fire." {24} Two potential problems result from this. First, what if the sample was *actually part of a repair site*? If this happened a medieval date would be expected, for that was when the repair was made. Second, carbon molecules from the Shroud's silver casing may have altered the cloth's carbon content by becoming mixed with the cloth during the fire. "By not checking out these factors and including them as part of the dating equation, the labs left themselves open for a faulty date". {25}

Another researcher, Dr. Leoncio Garza-Valdes, has discovered a bacterium which produces a clear "bioplastic" coating on many ancient objects. When he studied samples of the Shroud, he found them to be "covered by the bioplastic coating . . . and by many colonies of fungi." {26} Additionally, Dr. Garza-Valdes claims that hydrochloric acid and sodium hydroxide, the standard cleansing agents used on ancient artifacts, do not remove this bioplastic coating. If he's right, and the Shroud sample included additional carbon 14 atoms from contamination material, a medieval date for the Shroud *might* be misleadingly young.

Of course, none of this *proves* that a medieval date for the

Shroud is incorrect. Still, it is worth remembering a statement by Dr. Willy Wolfig, a researcher at one of the labs that dated the Shroud: "The C-14 method is not immune to grossly inaccurate dating when non-apparent problems exist in samples from the field. The existence of significant indeterminate errors occurs frequently."[\[27\]](#) Given such a possibility in the case of the Shroud, the need for further testing seems essential.

How Was the Image Formed?

What process led to the formation of the image on the Shroud of Turin? While this remains something of a mystery, there are only three possibilities: human artistry, natural processes, or supernatural processes.

Walter McCrone maintains the image was painted with red ochre and vermilion.[\[28\]](#) John Heller and Alan Adler disagree. They say the Shroud had too little of either of these pigments for even "one painted drop of blood."[\[29\]](#) Furthermore, Don Lynn and Jean Lorre "discovered that the Shroud's image is nondirectional."[\[30\]](#) That is, it does not appear to have been caused by any hand movement across the cloth. Such observations make the artistic hypothesis at least questionable.

But others think the image was formed naturally. Sam Pellicori and John German believe it resulted from bodily contact with the cloth over a period of time. But this view also has difficulties. First, it postulates that the darker areas formed by more direct contact with the body over time. As Dr. German explains, the hypothesis was that "the oils in the skin (which Pellicori experimentally demonstrated produced the same fiber degradation we saw on the Shroud) would have longer to migrate into the linen and cover more individual fibrils."[\[31\]](#) This would result in the image being darker at those places where the cloth had longer contact with the skin. But some have argued that, if this were so, the back of the image

should be darker than the front—which it's not. In addition, if it did form naturally, then it's at least a bit surprising that no other burial cloth images have yet been found."

If the image resulted from neither art nor nature, could supernatural processes have formed it? Adherents of this view typically believe the image was created by something like a burst of radiant energy, possibly at the moment of Jesus' resurrection. Unfortunately, this hypothesis cannot account for *all* the Shroud image features. Still, supporters observe that the image reveals a dead man in a state of rigor mortis. Yet there is no trace of bodily decomposition on the Shroud. This *may* indicate that the man was removed during rigor mortis, which generally lasts less than forty-eight hours after death. But there are difficulties in supposing the body was removed by human agency. "Since the cloth was loosely attached to the body from the dried blood, any attempt to remove it probably would have damaged the stains. Yet these . . . stains are anatomically correct."[\[32\]](#) Nevertheless, while proponents admittedly have some good arguments, they cannot *prove* that the Shroud offers us an image of the risen Christ.

So we may be left with something of a mystery. We simply don't have enough information to reach absolute certainty about the Shroud. It's important to remember, however, that the truth of Christianity does not depend on whether or not the Shroud is Jesus' burial cloth. A solid case for the bodily resurrection of Christ can be made with or without the Shroud. Thus, having tried to fairly present some of the evidence, I must now leave you to reach your own verdict on the Shroud.

Notes

1. See Gary Vikan, "Debunking the Shroud: Made by Human Hands," and Walter C. McCrone, "The Shroud Painting Explained," *Biblical Archaeology Review* Vol. 24 No. 6 (November/December 1998), 27-29.

2. Dr. Kenneth E. Stevenson, *Image of the Risen Christ* (Toronto, Ontario: Frontier Research Publications, Inc., 1999). In this section I have relied heavily on Stevenson's research in *Image of the Risen Christ*, pp. 93-105.
3. John 19:1.
4. Matt. 27:29.
5. Luke 23:33.
6. John 19:32-34.
7. Walter C. McCrone, personal e-mail, October 5, 2000.
8. Walter C. McCrone, "Walter C. McCrone Responds," *Biblical Archaeology Review* Vol. 25 No. 2 (March/April 1999), 66.
9. Ibid.
10. McCrone, "The Shroud Painting Explained," 29.
11. Ibid.
12. Giles F. Carter, "The Chinks in Their Armor," *Biblical Archaeology Review* Vol. 25 No.2 (March/April 1999), 17.
13. Steven Schaferamen, "Comment," *Current Anthropology* 24 (June 1983):301, cited in Stevenson, 73.
14. Alan D. Whanger, "Bolstering the Case for the Shroud," *Biblical Archaeology Review* Vol. 26 No.3 (May/June 2000), 65.
15. Ibid.
16. Stevenson, 127.
17. McCrone, "Walter C. McCrone Responds," 66.
18. Vikan, "Debunking the Shroud: Made by Human Hands", and McCrone, "The Shroud Painting Explained," 29. Vikan gives the date 1357, McCrone 1356. At any rate, both would agree that

there is no reliable documentation for the Shroud prior to 1356.

19. Stevenson, 29-42. I have relied heavily on the historical reconstruction of the Shroud presented by Stevenson in this section.

20. Vikan, "Debunking the Shroud: Made by Human Hands," and McCrone, "The Shroud Painting Explained," 29.

21. Stevenson, 34.

22. Ibid.

23. John McRay, *Archaeology and the New Testament* (Grand Rapids, Michigan: Baker Book House, 1991), 34. However, McRay himself appears to accept a medieval date for the Shroud (see p. 221).

24. Stevenson, 118. I have again relied heavily on Stevenson in this section, pp. 107-124.

25. Ibid.

26. Leoncio A. Garza-Valdes, *The DNA of God* (New York: Doubleday Books, 1999), 34, cited in Stevenson, 121.

27. Willy Wolfi, *Nuclear Instruments and Methods in Physics Research*, B29 (1987): 1-13, cited in Stevenson, 120.

28. Walter C. McCrone, "The Shroud Painting Explained," 29.

29. John H. Heller, *Report on the Shroud of Turin* (Boston: Houghton Mifflin, 1983), 194, cited in Stevenson, 187.

30. Stevenson, 188.

31. John D. German, personal e-mail to the author, December 29, 2005.

32. Ibid., 205.

