

# An Open Letter to Journalists

A few weeks before he died in 1963, Washington Post publisher Philip Leslie Graham described journalism as the "first rough draft of history." Here is what he said:

So let us today drudge on about our inescapably impossible task of providing every week a first rough draft of history that will never really be completed about a world we can never really understand.

It is a wonderful quote. Journalists love it for it justifiably elevates the significance of what they do. But there is an admonition in the last dozen words that should not be overlooked. All of us can think of many instances when the first draft of history was wrong; from world events to science. It is a problem when journalists, by turning to dusty archives or online repositories, repeat an old story without taking the trouble to look for new information. It was, for instance, the press that repeatedly called the speed of sound a barrier (as it pertained to airplane flight) while scientists were proving otherwise in scholarly, peer reviewed scientific journals. It is still called the sound barrier.

When it comes to the Shroud of Turin, journalists often fall into the first-draft trap. Some recent examples – that have become something of urban legends – will serve to illustrate this:

- John Blake in *The Atlanta Journal-Constitution* wrote: "The image of a bearded man was declared to be the image of the crucified Christ for centuries until carbon dating in 1988 suggested it was a medieval forgery." (March 2, 2007).
- Randi Kaye on CNN's *Anderson Cooper 360°* said: "Forensics in the past 40 years didn't show blood, instead, something similar to paint." (February 26, 2007)

In fairness, the *Associated Press*, *BBC*, *The New York Times* and many other news outlets have reported on studies appearing in peer reviewed journals of science that challenge the carbon dating and the paint claim. The journals include:

*Applied Optics*  
*Archaeological Chemistry; Advances in Chemistry*  
*Archaeological Chemistry: Organic, Inorganic and Biochemical Analyses*  
*Canadian Society of Forensic Science Journal*  
*Interdisciplinary Science Reviews*  
*Journal of Imaging Science and Technology*  
*Journal of Optics: Pure and Applied Optics*  
*Journal of Research of the National Institute of Standards and Technology*  
*Melanoidin*  
*Thermochimica Acta*

Blake's article in *The Atlanta Journal-Constitution* was not about the shroud but the Simcha Jacobovici and James Cameron documentary on the Talpiot tomb and the claim that it is the tomb of Jesus. The headline read: "Critics say some archaeological finds, as in 'The Lost Tomb of Jesus,' bypass scholarly scrutiny and lose scientific credibility."

To support this line of thinking Blake cited Jodi Magness, a well known and highly regarded University of North Carolina professor of Judaism. Blake wrote:

Magness, who doesn't believe "The Lost Tomb of Jesus" documents a credible find, said most archaeologists would normally make such an announcement through scholarly channels. They would present a paper at a scholarly meeting or submit an article to a scholarly journal subject to peer review. The Dead Sea Scrolls, for example, have been scrutinized by scholars for at least 50 years.

So why did Blake mention the shroud? Was it to illustrate the problem of "bypass[ing] scholarly scrutiny?" If so, he blundered. Updated, peer reviewed science tells a completely different story, as we will see. Blake completely ignored the ongoing scrutiny of the shroud by scholars. Yes, ongoing. Yes, scholars – not a statistician here and a researcher there as is the case in Cameron's documentary. The number is well over a hundred. Blake ignored the many scholarly meetings at which scores of scientific papers have been presented.

It would be easier to argue the possible authenticity of the shroud in a court of law where evidence is allowed than in the media. Better yet is the court of science: peer review. The 1988 carbon dating, as we will see, is not the final draft of history.

Randi Kaye might be interested to learn that not a single peer reviewed scientific study supports her claim. In fact, several peer reviewed forensic studies clearly establish that the bloodstains are of real blood and that there is no paint on the shroud. What were CNN's sources for this data? If not old first drafts of history, what? We will explore that.

There is a common misconception among some journalist that the issue of authenticity is somehow between religion and science. This is old news and it is wrong. Consider this on-air statement by Kiran Chetry, on CNN's Anderson Cooper 360° broadcast:

Well, you love mysteries. We have another one, another unsolved mystery of the Christian faith: a piece of cloth that some believe is sacred, others consider a scam. It's the Shroud of Turin -- what science has found, and why those findings have not convinced true believers. (February 26, 2007)

Look at the list of scientific journals. Read the articles (listed in an appendix to this letter). There is not a single religious assumption. No peer reviewed scientific journal would allow one. It is completely contrary to the philosophy of science and the rigors of the scientific method. Controversy surrounding the possible authenticity of the shroud, as we will see, is a matter for real science, objective history and archeology.

That does not mean that religion is not a powerful consideration. For many people the shroud is a cherished relic, even a reminder of Jesus' ordeal. But to pin one's hopes or belief in his resurrection on it is probably unwise and simplistic.

Philip Ball, a journalist and a scientist, who for many years was the physical science editor of *Nature*, wrote a commentary in *Nature's* online edition following the publication in *Thermochimica Acta* of a paper by Raymond Rogers with two proofs showing that the carbon dating samples used were invalid and that the cloth is definitely many centuries older than the carbon dating results. Rogers was a highly regarded chemist at the Los Alamos National Laboratory. He had been honored as a Fellow of this prestigious UCLA laboratory. In his home state of New Mexico, he was a charter member of the Coalition for Excellence in Science Education. For several years he served on the Department of the Air Force Scientific Advisory Board. He had published over fifty peer reviewed scientific papers in science journals. It should also be noted, as Ball made clear, that Rogers had not set out to prove that radiocarbon dating was wrong. He was actually trying to disprove a speculative claim that the sample used in the carbon dating was from a mended area of the shroud. If true it would have invalidated the carbon date. Rogers thought the idea was crazy, the idea of a "lunatic fringe." He had complete respect for the technology and the quality of work done by the labs.

Ball acknowledged that Rogers was a respectable scientist; a sentiment that was echoed by Lloyd A. Currie writing in the *Journal of Research of the National Institute of Standards and Technology* (U.S. Department of Commerce). Currie, an NIST Fellow Emeritus, is a highly regarded specialist in the field of radiocarbon dating.

By the time Currie wrote his paper, he knew that Rogers, along with Anna Arnoldi of the University of Milan working with Rogers, were convinced that there was something to the "lunatic fringe" claim. Currie found the possibility credible. Currie was critical of the sampling protocol used in 1988. It was not adequate to prevent just the sort of error that Rogers now believed occurred. Rogers, at the time of Currie's paper, still had to undergo the months-long process of anonymous peer review.

It was when that peer review was finished that Ball wrote:

The scientific study of the Turin shroud is like a microcosm of the scientific search for God: it does more to inflame any debate than settle it. . . And yet, the shroud is a remarkable artifact, one of the few religious relics to have a justifiably mythical status. It is simply not known how the ghostly image of a serene, bearded man was made. It does not seem to have been painted, at least with any known pigments.

Notice the last two sentences? Ball is familiar with the peer reviewed scientific evidence. In fact, a thorough reading of the entire peer reviewed literature reveals something interesting: Not a single image-forming hypothesis, so far offered by anyone – including natural phenomena, artistic methods or unsubstantiated miraculous events – is sufficient to be called theory by the scientific definition of the word. According to the National

Academy of Sciences, a scientific theory is "a well-substantiated explanation of some aspect of the natural world that can incorporate facts, laws, inferences, and tested hypotheses."

Ball is right; nobody knows how the image was formed.

On the same Anderson Cooper show Chetry also said: "And, so, the debate over the Shroud of Turin, like so many others, continues, in spite of what science seems to say."

What science is she referring to? She might as well have reported that airplanes cannot fly faster than sound.

Delia Gallagher, CNN's faith and values correspondent then added: "It has been studied many times. And there seems to be a kind of general academic consensus that it's not from the time of Jesus."

Oh? This type of statement reminds me of when the maverick retired Episcopal bishop, John Shelby Spong, suggested that the general consensus of New Testament scholars is that Jesus wasn't buried. Gallagher is certainly not referring to the scientists "who studied [the shroud] many times;" the scientists who actually studied physical material from the shroud, the scientists who published papers in peer reviewed journals, or the scientists who have carefully studied the scientific literature?

Gallagher may be right on a global scale. But the comment is misleading. Perhaps if someone actually surveyed academics he or she might get a consensus. If asked what the academics know about the shroud and how they know it, a clarifying picture might emerge. It would probably be this: most academics know little or nothing about the shroud except what they hear or read in the media. But, I suspect, if someone surveyed those who have read the literature and understand it, he or she would get a very different picture from well over a hundred scientists, historians and archeologists who continue to study the shroud.

Personally, in considering the aggregation of scientific and historical evidence, I think that the shroud is the actual burial shroud of a Roman-style, circa 1<sup>st</sup> century crucifixion victim. It is by logical inference that I come to believe it is the actual burial shroud of Jesus. This is as close as I get to religious belief. That may well be the consensus among scholars engaged in shroud research.

What do I mean by inference? Imagine a river without a bridge. I am on one side of the river. Imagine that earlier I saw a man on the other side of the river and now he is on my side of the river. How did he get across? If earlier, I also saw a boat on the other side of the river and now I see it on my side of the river, I might infer that he used the boat. Any reasonable person might think the same. Yet we know this is not proof. If then, I notice that the man is in the process of securing the boat to the river bank with a rope, the inference becomes much stronger. But it takes something more before we can say we have proof he used the boat.

I think there is adequate historical evidence that Jesus was crucified, buried in a late-second-temple period tomb in the environs of Jerusalem, and that his followers discovered the tomb empty soon thereafter (why is not important here). Knowing that a burial shroud does not survive a tomb – human decomposition products will ravage the cloth within days – and recognizing that for the cloth to have been saved it must have been physically separated from the body at some point in time (again, why is not important here) and taken from an open tomb, I infer that it is Jesus' burial shroud.

That is not proof, of course. What we know about the shroud permits belief in its authenticity but does not compel it. Nor does it compel us to draw religious conclusions. Barrie Schwartz, one of the most prominent and objective shroud researchers of the last three decades, serves as a useful example. He once wrote:

Frankly, I am still Jewish, yet I believe the Shroud of Turin is the cloth that wrapped the man Jesus after he was crucified. That is not meant as a religious statement, but one based on my privileged position of direct involvement with many of the serious Shroud researchers in the world, and a knowledge of the scientific data, unclouded by media exaggeration and hype. The only reason I am still involved with the Shroud of Turin is because knowing the unbiased facts has convinced me of its authenticity. And I believe only a handful of people have really ever had access to all the unbiased facts. Most of the public has had to depend on the media, who always seem to sensationalize the story or reduce the facts to two minute sound bites from so-called experts who have 'solved the mystery.'

It is perhaps only fair to the reader of this letter to know what I believe, religiously. I am a Christian. Specifically, I am a theologically liberal Episcopalian. I do believe in the resurrection. I find no need for nuanced or widely different redefinitions of "resurrection" that have evolved to fit modern biblical revisionism or the suppositions of our scientific age. It is not for me just a metaphor for God's love or just a spiritual reality devoid of physicality. (I have no argument, however, with those who hold such views. I have held such views at times in my adult life). I don't need scientists to tell me bodily resurrection is impossible. I agree. Were it not impossible it would not be extraordinary. I just don't think God is necessarily bound to the laws of nature. While I rely in part on scripture, in part on historical arguments and in part on apologetics, I recognize gaps in what I can know and potential fallacies in my reasoning. So in the end, my belief requires a leap of faith.

Such belief does not define what else I believe. I am not, for instance, a fundamentalist. Such belief does not make me liberal or conservative, evangelical or orthodox, enlightened or not, smart or stupid. In no way does it constrain intellectual freedom. Nor does it diminish my belief in science or objective history. For instance, I fully accept evolution of the human species as true. Granted, we call evolution a theory. By that we mean that it is not completely proven. Indeed there are some missing data and processes that have not yet been explained. But the evidence in favor of evolution, including the

recent Tiktaalik roseae discovery, is overwhelming. I am quite certain that it is true. There is no leap of faith over a chasm of unknowing and potential fallacies as there is with my religious belief. It is a bridge called inference over a chasm of incomplete information.

The shroud has nothing to do with my faith. My faith has nothing to do with the shroud. It is a happy coincidence. As I see it, the case for the shroud's authenticity is similar to the case for evolution. Leaps of faith are fine. But rational inference built upon good, peer reviewed scientific data is required if we are to adhere to the principles of science and objective history.

### **Gallagher's Consensus**

Who might we find in Gallagher's consensus who has voiced an informed opinion that is founded on more than what is reported in the media? I can think of some possible examples, but not many (I am open to being proven wrong). John Dominic Crossan, Walter McCrone and Joe Nickell come to mind.

1) John Dominic Crossan: He brings to the table immense qualifications in 1st century history, biblical archeology and New Testament scholarship. Crossan is Professor Emeritus of Religious Studies at DePaul University in Chicago. He has published over twenty scholarly books on the historical Jesus. He was the cofounder of the Jesus Seminar. He is quite famous for his argument – quite brilliantly argued – that Jesus was not buried in a tomb but left on his cross as carrion for birds and wild dogs or perhaps thrown into a charnel pit. It is perhaps unfortunate that he is so well known for this theory; for it overshadows much of his other excellent work.

We can be confident that he was well informed and knew something about the real forensic science pertaining to the cloth, its image and the bloodstains. In 2002, three years before the carbon dating was proven wrong, he wrote:

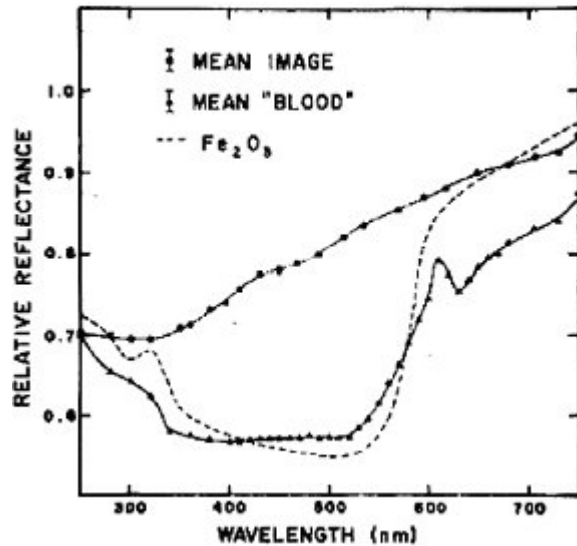
My best understanding is that the Shroud of Turin is a medieval relic-forgery. I wonder whether it was done from a crucified dead body or from a crucified living body. That is the rather horrible question once you accept it as a forgery.

Was he simply defending his Jesus-was-not-buried position? Those words don't reflect that.

2) Walter McCrone: He was a world renowned microscopist. In 1978, he claimed that he found paint on microscope slides of particles collected from the surface of the shroud. Thus he concluded that the shroud images and the bloodstains were painted. But McCrone was only one of many scientists who actually studied samples from the shroud's surface. And he was the only one to make such a claim. Mark Anderson, who worked for McCrone, did not agree with him (a little known fact). Anderson used laser-microprobe Raman spectrometry to demonstrate that what McCrone thought was hematite was in fact an organic compound.

Countless other studies presented at scholarly conferences or published in peer reviewed scientific journals show that there is no paint on the cloth. At least there is none in the image areas or in the bloodstains. Rogers summarized what is really a consensus among scholars who have studied the shroud.

The Shroud was observed by visible and ultraviolet spectrometry, infrared spectrometry, x-ray fluorescence spectrometry, and thermography. Later observations were made by pyrolysis-mass-spectrometry, laser-microprobe Raman analyses, and microchemical testing. No evidence for pigments or [paint] media was found. . . . The reflectance spectra in the visible range for the image, blood, and hematite are shown in the figure. The image could not have been painted with hematite or any of the other known pigments. The spectrum of the image color does not show any specific features: it gradually changes through the spectrum. This proves that it is composed of many different light-absorbing chemical structures. It has the properties of a dehydrated carbohydrate.



More recent studies (see the peer reviewed journal *Melanoidin*) show that the image is a caramel-like substance (a dehydrated carbohydrate), an unexplained, selective browning of an otherwise clear polysaccharide substance that coats the outermost fibers of the cloth. Two processes will cause such browning to occur – caramelization by heat and an amino/carbonyl reaction – but these do not explain other characteristics of the image.

Incidentally, none of McCrone's work was peer reviewed. He did publish his conclusions in *The Microscope*, published by the McCrone Research Institute and edited at the time by him. Numerous studies since – and they all contradict Kaye's claim – have been peer reviewed or presented at scholarly conferences.

3) Joe Nickell: He is a columnist for *Skeptical Inquirer*. He is consistently the most vocal scholar arguing against the shroud's authenticity. It may come as a surprise to many journalists, who frequently call upon Nickell as a scientific spokesman on the shroud, to learn that he is not a scientist and has expressed some rather strange views about scientific inquiry.

In an article entitled, “An Interview with Joe Nickell,” Eric Krieg of the Philadelphia Association for Critical Thinking, describes Nickell (using Nickell's own words) as an “investigator” and formerly an “undercover detective, teacher, draft dodger, river boat manager, carnival promoter, magician and spokesperson.”

“Joe impressed on me the difference between being a scientist and an investigator,” Krieg continued. “Joe seems to have no significant credentials . . . Joe remarks that a scientist tends to approach an investigation from the narrow view of his own specialty - where as a ‘jack of all trades’ would come up with more avenues of investigation.”

Nickell recently stated on CNN: “Clearly, the blood on the cloth is -- is not authentic. Old blood would be dark and blackened with age.” (February 26, 2007)

Is that true? Old blood usually does turn black. Various factors, however, can prevent this from happening. A chemist familiar with blood chemistry knows this. So does a forensic pathologist. But any scientist knows better than to make such a sweeping generalization.

A hemolytic agent on the cloth would prevent blackening. There is just such a material on the shroud, a superficial polysaccharide coating on the outermost fibers that varies in thickness in between 200 and 600 nanometers. The coating, the same coating that holds the images, appears to be a residue of raw starch and natural soap made from *Saponaria officinalis* (commonly known as Soapwort and Sweet William). Blood has been tested on linen with just such a super thin coating. It does not turn black. Blood on the shroud should not turn black.

Serum bilirubin, a bile pigment produced in significant quantities when a human body is under severe traumatic stress, also prevents the blackening of blood. Bilirubin is bright yellow or orange and stays that way. Bilirubin is present in the stains on the cloth. It is hard to imagine that this bodily excreted material would be found in the inorganic paints McCrone claimed he saw.

Randi Kaye’s comment that “Forensics in the past 40 years didn't show blood, instead, something similar to paint” was appended to Nickell’s words above. He was wrong and she was wrong. Every single study of the bloodstains since McCrone’s infamous claim that he found paint – many of them peer reviewed and published in scientific journals – has concluded that the bloodstains are from real blood and not paint.

Alan Adler, a professor of chemistry at Western Connecticut State University and an expert on porphyrins, and John Heller, Professor of Life Sciences at the New England Institute, published their studies in the peer reviewed scientific journal, *Applied Optics* and the *Canadian Forensic Society Science Journal*. They showed spectral analysis that confirmed that the heme was converted into its parent porphyrin. They identified haemoglobin in acid methemoglobin form due to age related denaturation. They established, within scientific certainty, the presence of porphyrin, bilirubin, albumin and protein. Enzyme tests were also used to breakup protein in cells. That is not “something similar to paint.”

Pathologist Pier Luigi Baima Bollone, working independently on other samples taken from the shroud confirmed the existence of blood. Immunological, fluorescence and spectrographic tests, as well as Rh and ABO typing of blood antigens clearly demonstrated the presence of real primate (likely human) blood. That is not “something similar to paint.”

During the same CNN broadcast, Nickell stated, in reference to the carbon dating, “The three laboratories were in such close agreement, it was almost like three arrows hitting a bull’s-eye.” This statement is scientifically and logically preposterous. Given that the three laboratories used pieces of a single sample and used the same procedures, it would be surprising if they did not produce similar results. And if the sample was tainted – as it was – we should expect similar incorrect conclusions.

But actually, the statement is not even true. The laboratories did multiple tests on sub-samples. The radiocarbon lab at the University of Arizona conducted eight tests. But there was an unacceptably wide variance in the computed dates. And so the team in Arizona combined results to produce four “results,” thus eliminating the more outlying dates (reportedly they did so at the request of the British Museum, which was overseeing the tests). Even then the results failed to meet minimum chi-squared statistical standards of acceptability. What this means is that the divided samples used in multiple tests contained different levels of the C14 isotope. Clearly the sample taken from the shroud was non-homogeneous. Moreover, statistical analysis shows a significant relationship between the measured age of various sub-samples and their distance from the edge of the cloth. This is consistent with the findings that the cloth was mended using a reweaving technique.

Scientist after scientist have challenged Nickell. Yet journalist after journalist quote him, seemingly without ever checking facts.

The following letter from Raymond Rogers to the editor of *Skeptical Inquirer* magazine can be easily found by anyone with access to the internet. It is important not only because it challenges Nickell on matters of science but it also challenges Chetry’s “true believer” claim. It is quoted in full below:

Dear Editor:

Joe Nickell has attacked my scientific competence and honesty in his latest publication on the Shroud of Turin. Everything I have done investigating the shroud had the goal of testing some hypothesis [Schwalbe, L. A., Rogers, R. N., "Physics and Chemistry of the Shroud of Turin: Summary of the 1978 Investigation," *Analytica Chimica Acta* 135, 3 (1982); Rogers R. N., Arnoldi A., "The Shroud of Turin: an amino-carbonyl reaction (Maillard reaction) may explain the image formation," in *Melanoidins* vol. 4, Ames J.M. ed., Office for Official Publications of the European Communities, Luxembourg, 2003, pp. 106-113].

My latest paper [Rogers, R. N., "Studies on the radiocarbon sample from the Shroud of Turin," *Thermochimica Acta* 425/1-2, 189-194 (2005)] is no exception. I accepted the radiocarbon results, and I believed that the "invisible reweave" claim was highly improbable. I used my samples to test it. One of the greatest embarrassments a scientist can face is to have to agree with the lunatic fringe. So, Joe, should I suppress the information, as Walter McCrone did the results from Mark Anderson, his own MOLE expert?

Incidentally, I knew Walter since the 1950s and had compared explosives data with him. I was the one who "commissioned" him to look at the samples that I took in Turin, when nobody else would trust him. I designed the sampling system and box, and I was the person who signed the paper work in Turin so that I could hand-carry the samples back to the US. The officials in Turin and King Umberto would not allow Walter to touch the relic. Walter lied to me about how he would handle the samples, and he nearly ruined them for additional chemical tests. Incidentally, has anyone seen direct evidence that Walter found Madder on the cloth? I can refute almost every claim he made, and I debated the subject with his people at a Gordon Conference. I can present my evidence as photomicrographs of classical tests, spectra, and mass spectra.

Now Joe thinks I am a "Shroud of Turin devotee," a "pro-authenticity researcher," and incompetent at microanalysis. If he ever read any of my professional publications, he would know that I have international recognition as an expert on chemical kinetics. I have a medal for Exceptional Civilian Service from the US Air Force, and I have developed many microanalytical methods. I was elected to be a Fellow of a national laboratory. A cloud still hangs over Walter with regard to the Vinland map. Joe does not take his job as "Research Director" very seriously. If he thinks I am a "true believer," I will put him solidly on the "far-right" lunatic fringe.

Joe did not understand the method or importance of the results of the pyrolysis/mass spectrometry analyses, and I doubt that he understands the fundamental science behind either visible/ultraviolet spectrometry or fluorescence. He certainly does not understand chemical kinetics. If he wants to argue my results, I suggest that we stick to observations, natural laws, and facts. I am a skeptic by nature, but I believe all skeptics should be held to the same ethical and scientific standards we require of others.

Sincerely,  
Raymond N. Rogers  
Fellow (Retired)  
University of California, Los Alamos National Laboratory  
Los Alamos, NM, USA

## **The Historical Perspective**

The historical evidence should not be ignored. It is meaningful. Ancient and medieval history is sometimes problematic because of gaps. Documents are often sketchy, prone to chronological mistakes and exaggerated. (In my opinion, that applies to the New Testament as well). Daniel C. Scavone, professor emeritus of history at the University of Southern Indiana, has compiled an impressive case for the shroud's provenance in the sixth century and possibly the first century. He cites numerous ancient documents that in varying degrees describe the shroud and trace its journey

- through the ancient city of Edessa from well before 544 CE
- to Constantinople, August 14, 944
- into the hands of the crusader and French duke of Athens, Othon de la Roche, circa 1204
- to Besançon, France, hometown of Othon de la Roche, circa 1207
- into the hands of Geoffrey de Charny in 1349 when he married Jean de Vergy the great, great granddaughter of Othon de la Roche

It is the task of historians to bridge gaps and interpret evidence as objectively as possible. There will always be debates about particulars; for instance: was the shroud part of Jean de Vergy's dowry?

There is little journalistic merit or academic merit to a statement like this by Nickell (he has also described himself as a journalist and an academic):

The shroud just shows up, under really questionable circumstances, in -- in the middle of the 14th century, with no history prior to that, shows up in the hands of a soldier of fortune, who couldn't say how he acquired it. (February 26, 2007)

## **A Final Thought**

Towards the end of the CNN segment on the Shroud of Turin, Chetry said to Gallagher:

The argument that the gentleman made in the piece is that they accidentally -- or they -- not accidentally, but they snipped a piece that ended up being a reconstructed part of the shroud. . . . Do we buy that?

Buy what?

That John L. Brown, formerly Principal Research Scientist at the Georgia Tech Research Institute's Energy and Materials Sciences Laboratory at the Georgia Institute of

Technology confirmed Rogers' findings. Brown worked independently and with different methods, including a Scanning Electron Microscope. He wrote:

This would appear to be obvious evidence of a medieval artisan's attempt to dye a newly added repair region of fabric to match the aged appearance of the remainder of the Shroud.

Buy what?

Had the shroud had been correctly carbon dated, the cloth should produce measurable amounts of vanillin. Found in medieval linen, but not in much older cloth, vanillin diminishes and disappears with time. Rogers, who initially accepted the carbon dating, discovered that there was no detectable vanillin in the flax fibers of the main part of the shroud just as there is no vanillin in the linen wrapping from the Dead Sea Scrolls. There was, however, vanillin in the corner from which the carbon 14 samples were taken. He demonstrated – his methods and conclusions withstood the rigors of peer review – that the main part of the shroud and the carbon dating sample had a different age. Had the cloth of the shroud been manufactured in 1260, the oldest date suggested by carbon dating, it should have retained about 37% of its vanillin.

Gallagher didn't answer Chetry's question. Why? Had she read the stories from major news sources? Gallagher is a talented, superbly credentialed journalist who has done some excellent reporting in the past. She had been a contributing editor for *Inside the Vatican* and we might imagine that she read the article about the carbon dating in that magazine.

Ultraviolet and x-ray photographs taken before the carbon dating sample was cut indicated that there were chemical differences between the sample area and surrounding areas of the cloth. Moreover, Adler had found a significant quantity of aluminum in yarn segments from the general area of the sample. It is not found on other samples from elsewhere on the shroud. Alum, an aluminum compound, the common mordant used with Madder root dye, was certainly a possible explanation. Many people wondered if the labs or church authorities had considered this red flags evidence or were even aware of it when they cut the sample. *Inside the Vatican* asked Rogers this question.

Rogers was in a difficult position. He had accepted the carbon dating. Paul Damon, one of the primary scientists in the 1988 carbon dating, was his friend. Nonetheless, Rogers was frank. *Inside the Vatican* wrote:

Asked whether he thought the authorities at Turin had been aware of such evidence as the 1978 photographs indicating that the corner of the Shroud from which they took the sample was unlike the rest of the cloth, Rogers responded that "it doesn't matter if they ignored it or were unaware of it. Part of science is to assemble all the pertinent data. They didn't even try."

Part of journalism, also, is to assemble all the pertinent data; not just the first drafts of history. If you must draw a conclusion and report it, do so with the pertinent data: the scientific and historical evidence. And if you must figure out if the shroud is relevant to what you or others may believe, do so, do not presume so.

It should be obvious that there is an opportunity for some hard hitting, objective, fact-based, investigative reporting about the shroud. It should be welcomed by proponents of authenticity and skeptics alike. Interview real scientists and historians. (A note of caution is in order: on any subject where religion is involved there is a lunatic fringe. It will be encountered, so never settle too much on one or two researchers, but many). Read the literature, which is not easy because it is highly technical and runs to hundreds of pages. Update the first drafts of history.

Explain the controversy; don't create it. The first draft of history – the 1988 carbon dating and McCrone's findings in 1978 – does not serve readers and viewers well when it is presented as gospel truth.

Before finalizing this letter, I sent a draft to over one hundred people who are well informed about the shroud. Most are academics. Most are scientists. Most are members of the international Shroud Science Group, an organization that will be hosting a very much secular, scholarly conference on the shroud at Ohio State University in August of 2008. Thanks to many who responded, I was able make some technical corrections. And, yes, I have a consensus.

A good place for a journalist to start is the fully cited List of Facts produced by the Shroud Science Group. This may be found at <http://www.shroudstory.com>.

Sincerely,



Daniel R. Porter  
<http://www.shroudstory.com>

## Shroud Related Peer Reviewed Papers in Science Journals – Newest to Oldest

*Thermochimica Acta* - Raymond N. Rogers, Los Alamos National Laboratory, University of California (Volume 425 2005 Issue 1-2, pp 189-194). The article is available on Elsevier BV's ScienceDirect® online information site.

*Journal of Research of the National Institute of Standards and Technology* – Lloyd Currie, NIST, Washington D. C. (Volume 109, Number 2, March-April 2004 pp 185-217)

*Journal of Optics A: Pure and Applied Optics* - Fanti, Giulio and Maggiolo, Roberto. "The double superficiality of the frontal image of the Turin Shroud." (2004: pp 491-503)

*Melanoidin* - Rogers, Raymond N and Arnoldi, Anna. "The Shroud of Turin: an Amino-Carbonyl Reaction (Maillard Reaction) May Explain the Image Formation." s vol.4, Ames J.M. ed., Office for Official Publications of the European Communities, Luxembourg, (2003, pp.106-113)

*Journal of Imaging Science and Technology* - Fanti, G. and Moroni, M. "Comparison of Luminance Between Face of Turin Shroud Man and Experimental Results." 46: 142-154 (2002)

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