Revisiting the Eye Images: What are They?
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One of the most controversial ongoing issues in Shroud research has been what are the objects over the eyes of the Man of the Shroud, especially the object over the anatomical right eye.

If they are coins, as we and many others have contended, many questions and objections arise: how can they be identified, what is the nature of the image formation process, why would coins be placed on a dead Jew, what is the historical background, what scientific studies have been done; and, if the images are of identifiable coins, what are the implications for better understanding the nature and the mystery of the Shroud?

Obviously, there are a number of ways of approaching, studying, and interpreting the images over the eyes. We want to give some of the historical background and to present various data showing research that has been done. While the studies on the eye images are not new, many have not seen a comprehensive presentation of the data, and there are some important photographs that are very little known. We became involved in these studies in 1981, and we will report on our observations and those of other researchers with whom we have been rather directly involved.

The Shroud entered the field of scientific interest substantially on the basis of the photographs taken by Secondo Pia in 1898 which showed that the Shroud images have characteristics of a photographic negative. Another major step forward occurred in 1931 when Giuseppe Enrie took another set of excellent black and white photographs of the Shroud on large glass negatives with filters designed to enhance image details.

From our perspective, an important event occurred in the early 1930s when Fr. William Berry, who was teaching at the seminary at Esopus, NY, visited Turin and met with Giuseppe Enrie, who gave Berry a set

of the glass negatives of his 1931 photographs of the Shroud. Thus, there was a first generation set of Enrie's negatives at Esopus. Then the Holy Shroud Guild was founded in 1951 at Esopus, with Fr. Adam Otterbein as President and Frs. Peter Rinaldi and Francis (Frank) Filas as Vice-Presidents. Filas, who was Professor of Theology at Loyola University in Chicago and also was rather experienced in photography, examined the Enrie negatives in 1954. He became highly interested in the Shroud, had 8 x 10 inch negatives made from the Enrie negatives for his own use, and began giving illustrated lectures on the Shroud.

In the 1970s, Drs. John Jackson, Eric Jumper, and Bill Mottern became interested in the Shroud. They borrowed one of Filas' Enrie negatives to study with the VP-8 Image Analyzer that they were using in their space satellite data research. When they placed the Shroud negatives in the Image Analyzer, the startling results of 3D images sparked great scientific interest and led to the Conference of Research on the Shroud of Turin in Albuquerque, New Mexico, in March 1977 and eventually to the monumental STURP research studies on the Shroud beginning in 1978. The button-like projections over each eye were noted then, and speculation arose that these might be images of coins. On the basis of their size, Ian Wilson suggested that these might be images of the widow's mite or prutah coins of Pontius Pilate. (We and others have often referred to these as "lepton" coins, but this is technically incorrect, as there had been lepton (small) coins struck by previously, but not by Pontius Pilate.)

Filas joined the small group studying the images of the eyes, and in August 1979 had an enlargement of the face made for use in a television production. Enrie had taken two photographs of the face, one full size and one taken from a distance that was 2/3 size. The latter showed details that were not nearly as apparent on the full size photograph, and while studying the 2/3 size photograph, he was suddenly struck by some sort of a design over the right eye. He took the photograph to Michael Marx, a Greek numismatist specializing in ancient coins. On magnifying the area, Marx identified four capital Greek letters, UCAI. Filas then recalled noting these little patterns in 1954, but had made nothing of it at that time. The letters were curving around a shepherd's crook-like pattern, which is the Roman augur's staff or lituus. The only coins ever struck with the lituus

as the major design are the prutah of Pontius Pilate. In 1979, Filas, along with the several other investigators, was given a souvenir Pontius Pilate lepton coin by numismatist Bill Yarbrough. Filas published a manuscript in 1980 entitled "The Dating of the Shroud of Turin from Coins of Pontius Pilate".

In May 1981, Filas took his negatives of the face to Log E/ Interpretation Systems to have the right and left eye areas digitally analyzed in detail. The results were rather startling, as the letters and the lituus pattern stood out quite clearly without distortion in 3D over the right eye. The coin outline over the left eye was clear, but there was no clear evidence for an internal design such as over the right eye. The letters over the right eye are clearly UCAI, which presented a problem since the letter "C" would indicate a misspelling, since the expected letter should be a "K". This particular misspelling on a coin had never been recorded previously.

Having heard about his work, and having recently developed our Polarized Image Overlay Technique for detailed image comparison and analysis, I contacted Filas first in July 1981. He responded quickly and sent me the material he had at that time. This developed into a very close working relationship until the time of his death in 1985.

An overlay comparison shows that the Log E Interpretation Systems digitalized image of the right eye area is highly congruent with the Enrie original except for the desired reductions in the weave pattern and the increased sharpness of the image. It is important for those doing image analysis that one does not make significant alterations or additions to the original image by digital manipulation and hence come to incorrect conclusions.

In August 1981, a television crew wanted to produce a program on the new image analysis findings, and Filas had a 25 times black and white enlargement made of his coin for a better visual by Gamma Laboratories, professional photographers specializing in photographic enlargements. On looking at this enlargement, Filas was startled to observe that on his coin was this "C" misspelling. He had this finding confirmed by several numismatists, and had his coin photographed by three different professional photographers. He sent us this additional material, and by our overlay examination we found

the astonishing congruency findings between the Filas coin and the image over the right eye on the Shroud. The only logical conclusion from the evidence is that the coin that Filas was given was struck from the same die as the coin that formed the image over the right eye.

With the help of the Duke University News Service, we released these findings of the right eye into the media in April 1982. Filas came down from Chicago at that time to visit with us, and brought his collection of three coins with him. I photographed his coin, and was able to recognize the Greek letters on the coin reverse indicating it was struck in AD 29. In the fall of 1982, I showed these findings to Dr. Alan Adler who immediately recognized that the overlay comparison showed that the image on the Shroud came off of the high points and irregular surfaces of the coin, which is characteristic of corona or electrostatic discharge. Filas put out a second edition of his monograph in 1982.

Another researcher entered these studies at this point. Oswald Scheuermann, a physics teacher in Germany, had been experimenting with using corona discharge to produce images; and among the images he had produced was that of a medallion on linen. We contacted him and sent him a Pilate prutah coin similar to the one over the right eye. He promptly sent us a piece of linen bearing a corona discharge image of that coin that is strikingly similar to the image over the right eye. At our suggestion, he then did a variety of experiments, including an image of a prutah coin with the recording edge of the film angled up from one edge of the coin. The resulting minutely detailed image demonstrated that indeed the image is produced off of irregular, elevated, and edge features of the coin. In addition, it shows that the corona discharge image can be transmitted through air for a short distance.

During this time there were a number of skeptics and detractors who raised a variety of objections to the findings of Filas, and which are still being raised. To quote from the second edition of his monograph, Filas stated "The reason for my seeking out the assistance of electronic image analysis lay in the continuing public attacks from critics who denied the existence of any intelligible pattern and who call the coin identification "wishful thinking". In fact, some

critics stated in print that my coin discovery had to be false since they knew that such a misspelled coin did not exist. That was why I submitted the coin to three experts in technical photography for four separate sets of photographs. But the dissenters were still not satisfied. They claimed in the media that all this evidence was inconclusive. They contended that the imprints on the 1978 photographs of the Shroud were not as clear as the coin imprints on the Enrie photographs of 1931. They asserted that the "UCAI" coin in existence was weather-beaten: that it was not legible enough: that it was only a single example and might be a unique accident; and that it was too small to carry any significance."

Filas undertook extensive work and consultations to deal with these criticisms and complaints. For instance, he notes that the coin images are visible and discernable not only on the Enrie photographs, but also on the 1973 photographs of Judica-Cordiglia, and on the 1978 photographs of Vernon Miller. For those who doubt this, I recommend observing the right eye area on the Vernon Miller photograph on page 753 of the June 1980 issue of National Geographic magazine. Also, with magnification, the UCAI letter patterns can be faintly seen in the tiny Shroud face photograph on the back cover of Ian Wilson's Book "The Shroud of Turin: The Burial Cloth of Jesus Christ?" of 1979.

For further confirmation, Filas took his material to Professor Robert M. Haralick, an internationally known computer image analyst, who was at that time at the Virginia Polytechnic Institute. Haralick spent about 6 months doing a variety of digital enhancements using the 1931 and the Miller 1978 photographs. He concluded (and published in 1983 a 66-page monograph entitled "Analysis of Digital images of the Shroud of Turin"), that "the right eye area of the Shroud image contains remnants of patterns similar to those of a known Pontius Pilate coin dating from 29 AD." He also showed that the image was independent of the weave pattern.

We feel there is a logical reason why the coin image of the right eye on the Miller 1978 photograph is not as obvious as that on the Enrie 1931 photograph. There is some fragmentation of the image pattern. We feel this occurred when the Shroud was suspended vertically for a brief limited showing in 1973. A comparison of the Shroud face image

at the various times of being photographed in 1898, 1931, 1969, 1973, and 1978 shows that the right side of the face was markedly distorted vertically during the exhibition in 1973. A model shows that the linen was strongly stretched in a line that ran directly through the right eye area. This stretch most likely caused some rotation, displacement, or flaking of the threads, thus partially fragmenting the image. A comparison overlay of the landmarks on the 1931 and 1978 facial photographs shows a progressive displacement of the two images downward through the right side of the face for up to 1 centimeter, indicating clear changes in the Shroud fabric and image.

Filas had a Professor of Mathematics determine the "mathematical probabilities for a chance, spurious appearance of the weave of the Shroud of Turin to account for the lituus and the letters UCAI..... instead of these markings representing an actual Pilate coin on the right eye of the dead Man of the Shroud." The result obtained was only one chance in 6.2273 x 10 to the 42 power. While the individual steps in this calculation can be challenged in favor of some other recalculation of probabilities, there can be no reasonable doubt that the chance of random appearance is one in an astronomical number.

For those who note that there are possible letter patterns in many areas of the Shroud, Filas wrote the following: "There is no doubt that the weave of the Shroud is extremely deceptive, since individual outlines can easily appear to approximate capital and cursive letters in different languages (examples given). But in all honesty these occurrences are relatively rare, given the huge area of the Shroud. They also do not add up to rational combinations." I (Alan) have examined excellent Shroud photographs in great detail, and concur with Filas. In addition, there are faint, fragmentary images in many places, most of which I feel are from wilted flowers. Our policy has been to positively identify an image as a letter only if it matches some known object. Thus, we (i.e. my wife Mary and I) will only verify several of the letters on the coin over the right eye, several very fragmentary letters on the prutah coin over the left eye, and several faint letters over the titulus. We are well aware that others have claimed other letters, and they may be correct, but we are very conservative about what we put into print. We apply the same basic criteria to the other objects that we have identified. There needs to be some confirmatory evidence for conclusions or hypotheses

drawn.

For those who would like to see a photograph of the Filas coin, I would recommend going to our website at www.shroudcouncil.org and going to the Shroud Image Comparison Movies to the part on Eye Image and Pontius Pilate lepton coin. The eye image is from the digital enhancements done by Log E/Interpretation Systems. Using the slider under the photographs, one can get an idea of how our polarized image overlay system functions, and can do one's own congruency counts. (A Point of Congruence being a similar structure, image, or shape in the same location on the two images being superimposed.)

Our image overlay technique allows for a statistical analysis, in a number of cases, of the relationship of a projected secondary image to an original image on the Shroud. A prime example of this is the congruency count of the superimposition of the enhanced Enrie right eye image and the Filas prutah coin. We diagrammed the points of congruence (PC) of these two images, as well as the discordant or non-matching points, and found 211 PC and 86 discordant points. We know that the Filas coin is not the coin from which the image was formed, but is a die-mate (struck from the same stamping die) of that coin. Since these coins were crudely struck, we would not expect an exact match. Since it has not been possible to get a neat statistical method, we use the analogy of finger-print matching, although the area of these coins is smaller than that of a finger print. Forensically, only 14 PC between the suspect finger print and that of the reference finger print are required to determine identity on the basis of probability (or improbability). The vastly increased number of PCs between the Filas prutah coin and the coin image over the right eye indicates a near identity of these two images. The likelihood of this being a random finding is infinitesimal.

By the way, our studies have shown that the Shroud would probably have touched the lateral edge of the coin over the right eye, but would have been a slight distance from the coin over the left eye (maybe 1 to 2 cm). I have laid the Filas coin itself on a life-size photograph of the Shroud face, and the match in size and configuration is virtually identical. Discerning the detail on the Filas coin is very dependent on getting the proper lighting angles. The letters TIOUCAI are fairly clear on the left side of the

coin but the letters are poorly struck on the right side and are barely discernable.

Just before he died, Filas sent me some additional photographs made directly from the Enrie negatives in Turin, as well as some interesting enlargements. In addition, some very high-resolution digital scans have been made from the Enrie negatives in relation to the recent holographic images studies.

The prints and the enlargements of the face and the right eye area made by Dutto Brothers Photographers in Turin from Enrie's original negatives show the coin outlines very plainly, and the enlargements show the letters UCAI quite clearly and distinct from the weave pattern. This invalidates the objections of some skeptics that the letter patterns are the accidental products of clumping of the silver grains from producing multiple copies and enlargements.

There is another important finding on the photograph that is enlarged about 25 times. The threads can be seen quite clearly, and the intensity of the image is quite variable on the individual threads, often densest on the uppermost portion of the thread but showing both lateral and longitudinal variability on the same thread. This would seem to indicate that the image-forming process is almost punctate, suggesting a radiation process such as corona discharge. In addition, this would by-pass the objection of some that the threads are too large to show the type of detail on the Shroud image that we cite and illustrate.

Filas also sent two prints from the 1898 Pia photographs that I had not seen previously. The focus is excellent, and the details of the face, such as the teeth and the outline of the coins over the eyes, stand out slightly more clearly than on the Enrie photographs. A close-up of the right eye area shows the letters OUCAIC and the lituus somewhat more distinctly. An overlay comparison of the Pia and Enrie right eye images shows the same structures visible on both, except that details on the Pia photograph are slightly superior to those on the Enrie photographs. Again, this clearly refutes the idea of some that the right eye images are somehow an anomalous finding peculiar to the Enrie photographs.

Summary

We show that there is clear evidence of the image of an identifiable coin over the right eye of the man of the Shroud. Remarkably, the late Fr. Frank Filas was given a Jewish prutah coin struck during the reign of Pontius Pilate in Israel, which has been found to be a die-mate of the coin which formed the image over the right eye. This particular coin, which is the Biblical "widow's mite", was struck in A.D. 29. Our polarized image overlay technique allows for a detailed comparison between the Filas coin and the image over the right eye; the huge number of demonstrable points of congruence between the two coins indicates that this is no random finding. The pattern of the images, from the irregular surfaces and high points of the coin, is the pattern that would be expected from corona or electrostatic discharge.

Hence, the coin image over the right eye gives several important answers to a better understanding and appreciation of the unique nature and importance of the Shroud of Turin and its images. The image of the identifiable coin dates the Shroud to about A.D. 30, and locates its origin to ancient Israel. The nature of this image indicates that its origin is a complex radiation process, putting the origin totally out of the possibility of being either an artistic production of some sort or the product of some gaseous diffusion from the body.

Ponder the evidence.

References

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