

A Review of Three Recent Papers on the Shroud by Hugh Farey

There has been no shortage of papers published in various places since I last reviewed any and a comprehensive survey of them all would be tedious. However, two have sparked considerable controversy, and others have cast an ambivalent eye over received wisdom, enabling fresh perspectives and suggesting new avenues for research, so I have selected a few for discussion.

What type of blood is present on the Shroud of Turin?

Existing Data vs. To Be Determined

Kelly P. Kears, at shroud.com/pdfs/kearse4.pdf, October 2017

Investigations into the effect of carbon monoxide exposure on bloodstain color: Implications for the Shroud of Turin

Kelly P. Kears, at shroud.com/pdfs/kearse5.pdf, October 2017

Kelly Kears is an immunologist by profession and very well placed to review all the reported results of investigations into the ‘blood’ stains on the Shroud. Five of his papers at shroud.com are devoted to them, and although I think that personally he has no doubt that the Shroud is authentic, they are all cautionary in tone. From the first scientific investigation into the Shroud in 1973, both positive and negative results regarding whether the blood is blood at all, what type it is, and why it is still red after all these years have been hotly contended, mostly because in spite of everyone’s best efforts, few of the findings have been truly definitive.

Kears steers a careful path through all these investigations, precisely distinguishing what can be learned from the science from what can be inferred by context. This is important to him, and has relevance to other aspects of Shroud study. In the first paper reviewed here he finds that while the ‘blood’ can be reasonably determined to be real blood, and specifically primate blood, it cannot be concluded to be human. From a purely scientific view, it could as well be from an orang-utan as a man, requiring yet more tests before we can be more specific. Of course, neither he nor anyone else seriously thinks that orang-utan blood has ever been more easily obtainable than human (except perhaps in some remote parts of Borneo), but the it is the distinction between science and context is the point of the article.

Kearse's second paper explores a suggestion that exposure to carbon monoxide, such as might have been generated by the fire of 1532, could maintain, or re-establish the original red colour of a bloodstain. After an abortive start, when impurities in the gas actually accelerated browning rather than delaying it, a pure source of CO revealed the characteristic "cherry red" colour much mentioned in crime novels. However, the colour did not last, and although experiments were carried out on both fresh and old blood, and on a variety of substrates, the hypothesis that CO could be responsible for the colour of the blood on the Shroud was not found to be supported.

Atomic resolution studies detect new biologic evidences on the Turin Shroud
E. Carlino, L. De Caro, C. Giannini & Giulio Fanti, PlosOne, June 2017

A BPA Approach to the Shroud of Turin

Matteo Borrini, Luigi Garlaschelli, Journal of Forensic Sciences

These two papers, in respectable journals, have aroused considerable controversy, in entirely opposite ways. The first, claiming that fresh evidence has been found supporting a traumatic origin for the blood on the Shroud, was welcomed at first, but subsequently retracted by the Journal in which it was published, while the second, suggesting that the bloodflows could not relate to a real human being, was much decried, but published in an irreproachable peer-reviewed journal.

Giulio Fanti examined a single fibre from the bloodstain on the feet, supplied by Barrie Schwartz. It came from one of Ray Rogers's sticky tape slides which had not been examined by Heller and Adler. Under scanning electron microscopes Fanti's team discovered tiny particles (30-100nm) clinging to the fibre, with even tinier particles (2-6nm) inside, like raisins in small plum puddings. Analysing these particles by EDXS, they found the elemental composition of the larger compatible with creatinine, and the smaller compatible with ferritin crystals.

Creatinine is a normal waste product of protein breakdown, usually excreted in the urine via the kidneys. High levels of it in the blood may indicate that the kidneys are not working normally (one reason being due to injury), or that the patient has been producing high levels of creatine, such as in vigorous exercise. However, of the various possibilities, the paper selected

only one: “High levels of creatinine in the blood are observed in the case of strong trauma.” Similarly, ferritin is a normal component of human metabolism, excess of which can also be symptomatic of renal failure. However, the paper unequivocally concludes: “the man wrapped in the [Shroud] suffered a strong polytrauma.” In my opinion this conclusion is not justified, and others of a similar view complained to PlosOne, which retracted the paper in these terms: “there are not sufficient controls to support conclusions referring to human blood or physical trauma. For example, period ink and animal blood controls were not included in diffraction and STEM analyses [...] and the creatinine findings do not provide definitive evidence of trauma or violence. Thus, we consider that the main conclusions of the article [...] are not sufficiently supported.” There were also comments about the provenance of the fibre and the involvement of STuRP being a potential source of bias, both of which which I think unfair.

Luigi Garlaschelli is a showman and professional debunker, Head of Experiments for the Comitato Italiano per il Controllo delle Affermazioni sulle Pseudoscienze (CICAP), and no friend of the Shroud. In 2010 his widely publicised reproduction of the Shroud was fiercely criticised not only for its failure to replicate some diagnostic features of the real Shroud image, but also for his cheerfully unrepentant overconfidence, and the publicity-conscious addition of crude representations of the blood flows and burn marks. The fact that he did an interview for Playboy magazine didn’t go down well with the conservative Christians of the mid-west either.

So, it was with some concern that serious scholars discovered that some tentative experiments with blood flows that Garlaschelli carried out with Matteo Borrini in 2014 had been repeated and extended, formally written up, and published in the Journal of Forensic Science. Using a cannula to simulate the source of blood from the nail-hole in the wrist, and a wet sponge on a stick to represent the spear making the lance-wound in the side, Borrini and Garlaschelli demonstrated that the bloodflows down the arms were only possible if they were almost vertical, and that the bloodflow from the lance-wound was unrealistic. As with the previous experiments, these demonstrations lacked rigour, were simplistic and superficial, added little to the non-authenticist case, and should probably have been almost completely ignored by those who believe the Shroud is authentic.

However, the paper was roundly attacked, not only with sensible objections, but unfortunately with some spurious accusations that have served more to strengthen the paper's validity than to discredit it.

The most cogent objection was that tubes or sponges delivering blood (and simulated blood) treated with anti-coagulants onto a heathy but motionless subject or a plastic dummy are poor representations of wounds exuding a variety of body fluids over the body of a tortured crucifixion victim.

The most ignoble objections were attacks on the personal credentials of the authors, and the suggestion that the Journal of Forensic Science is a vanity publication. Neither cast a worse light on the paper that it did on the objectors.

Editor's Note: Subsequent to the above publications, the peer-reviewed *Journal of Applied Optics* published a paper by A. Di Lascio, P. Di Lazzaro, P. Iacomussi, M. Missori and D. Murra.

Abstract: The unique reddish blood stains on the archaeological cloth known as the Shroud of Turin caught the attention of several scholars, who proposed different hypotheses to explain the unusual blood colour. To date, just a few hypotheses have been tested experimentally, and the results are debatable. In this paper, we test the strength of two hypotheses (namely, the presence of carboxyhemoglobin and the long-term influence of ultraviolet light on high-bilirubin blood) by the spectral reflectance of the blood-stained regions on the Shroud and by colour analyses of ultraviolet irradiated high-bilirubin blood stains on linen. The relevance of these simple methods to the study of stained textiles is discussed. The paper can be found here:

<https://www.osapublishing.org/ao/abstract.cfm?uri=ao-57-23-6626>

In an email exchange with one of the authors, Paolo Di Lazzaro, I asked if the detection of bilirubin not only confirmed that the coloration on the Shroud was indeed blood but whether its presence suggests blood affected by trauma. Here is his reply.

“Yes David, correct. Strictly speaking, high bilirubin today means a person with jaundice. In the case of the man of the Shroud, it is more likely

he was severely beaten. In fact, if you are beaten, red blood cells break, and each of them releases 200 million haemoglobin molecules. The liver, poisoned by this huge amount (many billions of molecules), releases enzymes that bind to the haemoglobin thus generating bilirubin.

*The evidence of crucifixion on the Shroud of Turin
through the anatomical traits of the lower limbs and feet*

V.L. Caja & M. Boi, *Archaeometry*, 2018

*Rigor mortis and news obtained by
the body's scientific reconstruction of the Turin Shroud man*

M. Bevilacqua, G. Concheri, S. Concheri, G. Fanti & S. Rodella

Caja and Boi's paper begins with the words, 'The Shroud of Turin [...] considered to be the burial cloth of Jesus of Nazareth, is [...] the only proof of an important historical crime,' honestly placing the authors firmly in the authenticist camp. It comes as rather a surprise then, that a detailed statistical analysis of various measurements of the imprints of the lower limbs demonstrates different configurations of the feet on the ventral and dorsal images. While the dorsal image seems clearly to show the print of the right foot, with the left foot angled over the top of it, the ventral image shows the feet almost parallel, an inconsistency the authors admit, that "does not comply with modern knowledge; in fact, the image fails with regard to some aspects that we cannot interpret yet."

Bevilacqua et al.'s paper also begins with an unequivocal statement of their belief in authenticity. "The Turin Shroud [...] wrapped the corpse of a tortured man, scourged, thorn-crowned, crucified and stabbed in the side.[...] It is not explainable by science." Yet another detailed analysis of the cloth has been carried out, resulting in yet another "scientific construction of a 3D model of this Man with an accuracy of the order of 1 cm," including a fairly exact reconstruction of the attitude of the body on the cross in which rigor mortis set in. Needless to say, it differs from all the other attempts to do the same, but, like all the others, the authors claim an accuracy never previously achieved. In particular, they notice a slight twisting of the body, and suggest that the nails might have been driven through the palms of the hands after all.