

Commentary: The Shroud and STRP
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The Shroud of Turin is an unusual perhaps singular object. There appears to be with nothing else like it anywhere. That presented certain problems immediately because there are no existing paradigms for which to structure some line of investigation. For example, if we were archeologists looking at a new tomb discovery we probably would have had a pretty good idea of where to start. On the hand it appeared to be a rather large piece of medieval linen with the frontal and dorsal images of a man who had undergone injuries resembling the scriptural description of the Roman crucifixion. Many believe this cloth to be the burial shroud of Christ and others, a cleverly contrived hoax. In spite of its emotional and religious content some see it as worthy of a serious scientific examination.

My involvement began around 1976 when I was a young Air Force physicist stationed at the Air Force Research Laboratory in Albuquerque. I was first introduced to the Shroud by my boss Rudy Dichtl while we were discussing my background. I had never heard of it and he happened to be connected with John Jackson and Eric Jumper, John and Eric were the major spark plugs of the 1978 investigation. He suggested I contact them if I was interested because there were some things in my background that might be of use. Well of course I was curious so I contacted John Jackson and he suggested I give a paper on infrared imaging and spectroscopy as an investigative technique at an upcoming Shroud conference in Albuquerque. To make a long story short when it became apparent that the authorities in Turin were looking favorably on an organized investigation, my paper along with others led to a research proposal. This was the first time in a long while that anyone was given an opportunity for a scientific investigation so how could I refuse an opportunity for an up close and personal encounter with this mysterious object not to mention a free trip or two to Italy.

So basically my involvement could be described as serendipitous. It was just happenstance; being in the right place at the right time. Jackson and Jumper are to be given a lot of credit for organizing the American expedition to Turin. It took considerable determination and investment of their personal time and the rest of the teams for that matter to actually to make this happen and with very little money and a lot of luck. The logistics are in themselves foreboding. To deal with some of these issues we formed a non-profit corporation called the Shroud of Turin Research Project (STRP). It was funded by private contributions, foundations and even National Geographic kicked in a few bucks and did a nice spread on the investigation and because it was a non-profit and tax deductible it encouraged contributions. Being on the Board of Directors for a time I can say that some of the goings on during this period are worthy of a book which I have no intention of writing.

Now when the word of this hit the street it stirred up a considerable amount of public attention. I was actually surprised at the level of interest. Most of the team members were giving talks around their home towns. And of course it had the two necessary ingredients for a feeding frenzy by the press: controversy and sensationalism so there were numerous

articles in the papers across the country; some factual some not so. As I recall the misinformation created some internal difficulties with STRP.

The 1978 investigation was a “first scientific look” for a long time and we had to decide exactly what we were going to do. Two big up front challenges were that the tests had to be non-destructive and secondly we were under serious time constraints considering all the things we wanted to do. We put together a battery of survey tests ranging from an extensive collection of scientific photography to x-ray imaging, x-ray spectroscopy, microscopic examination, visible and infrared spectroscopy, infrared imagery and other observations. Surface samples were taken with a form of sticky tape for subsequent microscopic analysis.

I was responsible for the infrared spectroscopy and infrared imaging experiments and was assisted by Steve Baumgart and Tom Haverty. The spectroscopy experiment had a potentially big payoff because it might have revealed the chemical fingerprint of the features on the cloth and gave us some clues as to what the surface chemistry was and maybe how the image was formed. In the mid seventies, computer controlled data acquisition wasn't all that common but we had managed to program a small desktop computer to automate the spectroscopy data collection which was essential for a good outcome. At least that was the plan.....

When we arrived in Turin our equipment was immediately confiscated by the Italian Customs Authorities. This was a bad omen. Apparently we had failed to follow proper customs procedures and in-order to get our equipment back we had to post a considerable bond. Even Mastercard wasn't going to pull us out of this. We clearly didn't have the money but as the story goes one of the local Monsignors in Turin offered up his church as a surety bond together with assurances that any further delay was going to cause an international incident that the customs authorities would get full credit. It was doubly complicated in those days because the city government in Turin was communist and there was no great sympathy to bring attention not to mention potential authenticity to a Christian relic. We got our equipment back and all was well and presumably the Monsignor got his Church back. The delay was costly in terms of being able to run a dress rehearsal but nevertheless we managed to get it together.

The Shroud was brought to the ornate Visiting Princesses Suite in the Savoy Palace with ceremony and sanctity. It was a solemn and emotional moment and it was difficult to keep my wits about me. I couldn't help being briefly taken with it. There was no question that this cloth was held in the highest esteem and somewhere along the line it became obvious that the locals didn't really appreciate our meddling with this holy relic. We were guarded round the clock by a detail of *Carabinieri*, equivalent of the Italian State Police replete with machine guns who kept vigilant watch over us and everyone else that came and went. Apparently there had been some threats and the authorities were taking no chances.

All of the tests were witnessed by a team of independent local officials as well. We were obliged to work around the clock because of the time constraints imposed on us and

experiments were scheduled in and out of the Suite according to a rigid schedule. Anyone who has ever been involved in an experimental study like this knows that things like this rarely go off as expected but in retrospect we managed to do rather well.

One touching moment in the wee hours of the morning stayed with me to this day. A priest brought in a man suffering from what appeared to be elephantitis. He was severely deformed and they touched the cloth with their gloved hands and prayed for healing.

When our turn came we had some rather startling 11th hour results that enabled us to capture a series of ghostly images in the long wave infrared from the cloth. The infrared imaging experiment went better than expected so we were encouraged. We had been only modestly successful at this sort of thing in previous laboratory attempts. As we prepared for the spectroscopy experiment, the computer went up in puff of smoke in the last minute as fate would have it and we had to revert to plan B which was to collect the data by hand. In those days it would have been impossible to get a replacement and reprogram it in a few days in the US much less in Italy in the middle of the night. Ultimately we didn't get nearly the quantity and quality of data we needed. We published what we could with the IR imagery with appropriate caveats and in spite of my best efforts couldn't get anything worth publishing out of the spectroscopy data.

In retrospect, I think that the immediate outcome of the 1978 testing wasn't particularly noteworthy. Contrary to some expected grand revelation on the part of the general public it was anticlimactic. Some of us published our papers and retired from active shroudology and others stayed on and continued their investigations. One of the stalwarts was Ray Rogers, a very competent and often pensive chemist from Los Alamos National Laboratory continued the investigation with the tape samples and published a number of papers on various aspects of the findings. In summary, we had a good idea of what it wasn't but the image itself remained an enigma. Ray's investigation shed a lot of light on the properties of the linen image but I think it's fair to say that proof of how it was done is elusive although a number of investigators have put forth some interesting and sophisticated demonstrations of ways it might have been formed. I would assure my skeptical scientific colleagues that determining the origins of the image on this cloth is non-trivial. Thus far everyone who has looked at it in detail has come away initially puzzled. It is my understanding that all attempted duplications by natural or artificial means have failed to account for all the properties of the image. Scientifically acceptable proof of the method of its creation in the 14th century or at the other extreme that it once covered the body of Christ is going to remain elusive for a long time to come.