The Contributions of the Shroud of Turin Research Project (STURP)

It is difficult for me to summarize the contributions of STURP without some obvious biases, since I was a member of the team and a direct participant in the events. So rather than an academic analysis of their contributions, let me simply share the experience with you.

I think it is best to start by reviewing the genesis of the STURP team that explains how an independent, multi-disciplinary group of 33 scientists and researchers representing twenty different scientific or professional organizations, came together as a team to perform an unprecedented series of non-destructive tests on the Shroud of Turin. Consider this my eyewitness account of what took place.

In 1976, a group of scientists from the Air Force Academy were working on a project with researchers at Los Alamos National Laboratory and its sister facility, Sandia Laboratories. On February 19, 1976, at Sandia Laboratories, John Jackson, Eric Jumper, Don Devan, Ken Stevenson and Bill Mottern viewed the Shroud's so-called three-dimensional properties on the screen of a VP-8 Image Analyzer for the first time. Mottern was using the analog device to evaluate x-rays in his other work at the lab. The VP-8 basically took the density of an image and converted it proportionately into vertical relief on a green screen display monitor similar to an oscilloscope.

The researchers used a 1931 Giuseppe Enrie photograph of the Shroud and input it into the VP-8 using a black and white video camera. They could then change the gain, rotate the image and tilt it at different angles in 3D space. The results were nothing less than astounding! The Shroud image apparently had spatial (or distance or topographical) data encoded into its density that yielded an accurate, natural relief of a human form on the VP-8 screen, a result totally unobtainable using any type of normal artwork or photographic image. Although this property had been suggested by Shroud scholars as far back as the early 1900's, this moment marked the first time that this property was visualized using a scientific instrument.

At this very same time, Prof. Giovanni Tamburelli and Nello Balossino in Turin were achieving similar results with the Shroud's image using computers and software they developed.

Although the VP-8 Image Analyzer is completely obsolete by today's standards, it remains the catalyst that caused John Jackson and Eric Jumper to form the STURP team. It also provided us with the first important piece of scientific evidence that showed the Shroud image to have unique properties unlike any other known image.

So Jackson and Jumper began looking for researchers with the required skills and talents that would be willing to volunteer their time and expertise and participate in a team project to study the Shroud's image. As new needs were determined, new members were added in the disciplines necessary to perform the tests that would be proposed. In that manner, a multi-disciplinary team was formed with the sole purpose of studying the Shroud. To that end, they began drafting a formal test plan that would detail the intended non-destructive experiments. After more than a year's work, the test plan was completed, STURP was officially formed and its purpose became very clear:

Seek permission to physically examine the Shroud itself using non-destructive testing, characterize it chemically and physically and try to determine how the image was formed.

That permission was ultimately granted to STURP by the legal owner of the Shroud at that time, King Umberto II, Duke of Savoy, whose family had owned the Shroud for five centuries. To assist us in our liaison with the King, the Church and the Turin Custodians, we worked closely with Fathers Peter Rinaldi, Francis Filas and Adam Otterbein of the Holy Shroud Guild in Esopus, New York, who provided unmeasurable support and assistance.

After working in smaller regional groups for over 16 months, STURP came together in September 1978, one month before the team was scheduled to leave for Turin, at a meeting called the "Dry Run." It was there that all the team members met each other (many for the first time), tested their instruments and equipment, some of which was custom designed and fabricated for the project, and rehearsed the procedures they intended to use on the Shroud. It was the culmination of a massive amount of work and it resulted in the formation of an amazing team of researchers.

STURP arrived in Turin on September 30, 1978, while the Shroud was still on public display, and was immediately notified that all 80 crates of their equipment that was shipped to Italy in advance had been seized and was being held by Italian customs. After a five day delay, the instruments were finally released and the team members loaded it all into the Royal Palace where the examination would take place. Having lost most of their originally scheduled time for setting everything up, they had to spend the next day and a half working round the clock to unpack, set up and calibrate everything. It was a hectic 36 hours and nobody slept.

On October 8, 1978, at around 10:45 p.m., and slightly ahead of schedule, the Shroud was brought from the Cathedral, where it had been publicly displayed, through the Guarini Chapel and into the rooms in the Royal Palace where STURP would examine the cloth.

The first 12 hours were reserved for Max Frei, Professor Baima Bollone, Professor Giovanni Riggi and their respective teams of researchers. When they had finished their experiments, STURP began executing their detailed test plan, which consisted of a battery of non-destructive tests and data collecting. They spent the next 120 hours working round the clock to complete tests in a variety of important areas.

> These tests consisted of multiple types of Photography including: Photomosaic, Photomacro and micro photography, Spectrally-resolved quad-mosaics, Ultra-violet reflectance and fluorescence photography, Transmitted Light photography and Documentation photography. Other testing included:
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> X-ray Radiography and X-ray Fluorescence: It is interesting to note that the x-radiography films had to be processed on site in the Royal palace to avoid their damage by airport x-ray machines on the return trip.
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> Other tests included Infrared Reflectance and Fluorescence Spectroscopy
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> Surface Adhesive Tape Sampling
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> Ultra-violet and Visible Spectroscopy

Upon completion of their work in Turin, STURP returned to the U.S. and spent the next three years reducing and evaluating their data, writing their results into formal scientific papers and submitting them to the finest scientific journals of the day. A total of 24 papers were published between 1980 and 1984, most of them in highly respected peer reviewed publications.

STURP held annual meetings during these years at which the team gathered to review and refine their data. Their final formal meeting was held at Connecticut College in New London, Connecticut on October 10 and 11, 1981 at an invitation-only symposium closed to the public. It was at this meeting that they issued a summary of their final report. Here is an excerpt:

> "The basic problem from a scientific point of view is that some explanations which might be tenable from a chemical point of view, are precluded by physics. Contrariwise, certain physical explanations which may be attractive are completely precluded by the chemistry… there are no chemical or physical methods known which can account for the totality of the image, nor can any combination of physical, chemical, biological or medical circumstances explain the image adequately. Thus, the answer to the question of how the image was produced or what produced the image remains, now, as it has in the past, a mystery.
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> "We can conclude for now that the Shroud image is that of a real human form of a scourged, crucified man. It is not the product of an artist. The blood stains are composed of hemoglobin and also give a positive test for serum albumin. The image is an ongoing mystery and until further chemical studies are made, perhaps by this group of scientists, or perhaps by some scientists in the future, the problem remains unsolved."

So in the end, what exactly were STURP's contributions and achievements?

1. In an unprecedented series of tests, they performed the first-ever direct, in-depth scientific examination of the Shroud of Turin using a comprehensive collection of then state-of-the-art non-destructive technologies.

2. They documented and characterized the chemistry and physics of the image and published more than 24 multi-disciplinary papers in credible scientific journals.

3. It is 38 years later and their collective work still constitutes a major portion of the scientific database of published Shroud science and remains the basis for much of Shroud research to this day.

4. STURP demonstrated that modern science could investigate an emotionally charged, enigmatic and highly controversial relic and do so in a truly professional, respectful and unbiased manner. Most importantly, STURP set the example and formed the solid foundation upon which future Shroud science will be based.

Thank you very much.

Barrie Schwortz