

# **Is The Shroud of Turin a Medieval Photograph? A Critical Examination of the Theory**

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## **Abstract**

Since the late 1970's, dozens of researchers, scholars, skeptics and "professional debunkers" have presented their theories on how the image on the Shroud of Turin was formed. Some are based on serious science while others show a complete lack of understanding of the Shroud image or its properties.

In this paper, I will review the "proto-photography" theory proposed by Prof. Nicholas Allen of South Africa. This theory concludes that the raw materials to produce photography not only existed in medieval times, but that a brilliant medieval "photographer" actually used them to invent photography 500 years before the *documented* creation of the first photographic negative by Joseph Niepce in 1818.

To his credit, Allen has actually achieved what he set out to accomplish. He has, without question, used medieval raw materials to create a faint but good quality photographic image on linen cloth. As I will show however, his own results provide the best evidence against the validity of his theory. In the end, any attempt at duplicating the image on the Shroud of Turin must match all of its physical and chemical properties, not just a select few. It must also withstand the scrutiny of careful, side-by-side comparison to the original.

In this paper I will provide just such side-by-side comparisons of key areas of the Shroud image vs. Allen's results and present my arguments against the validity of his theory based on my 30 years of professional photography experience.

## **I. Introduction**

In the last 30 years, the Shroud of Turin underwent the most intense and exhaustive study in its history. In 1969, 1973 and particularly 1978, literally thousands of photographs were made of the cloth and its image. With the advent of personal computers and more recently, the explosive growth of the Internet, the Shroud has become far more available for study than it ever was before. In fact, photographs of the Shroud are now readily available to anyone with a modem and the willingness to spend a few minutes downloading them.

This has not been without impact in the world of Sindonology.

Since the late 1970's, dozens of researchers, scholars, skeptics and "professional debunkers" have presented their theories on how the image on the Shroud was formed or described other artifacts they believe they have discovered hidden in the image. Some are based on serious science and are very credible, while others show a complete lack of understanding of the image and its properties and reveal the absence of any real research on the part of their proponents. To make matters worse, many of these theories have received wide public attention and in some cases, have actually been adopted as part of the "mythology" of the Shroud.

In this paper, I will review the "proto-photography" theory proposed by Prof. Nicholas Allen and present my arguments against its validity.

## **II. The Proto-Photography Theory**

This theory concludes that the raw materials to produce photography not only existed in medieval times, but that a medieval photographer created a light sensitive emulsion, coated it onto linen cloth and "exposed" this medieval "film" using a room sized camera obscura and a dead body hanging in front of its crystal lens as the subject matter.<sup>1</sup>

He goes on to claim that one half of the Shroud image was exposed at a time, first the ventral and then the dorsal half. He further concludes that it would take about four days to properly expose each half of the cloth, needing at least eight days to complete the entire task. Recently, he modified his theory to include a third exposure for the face, made with a different lens.<sup>2</sup> To prevent the decay of the body during more than a week of exposure to the bright sunlight necessary for adequate exposure of the "film," Allen suggests that the camera obscura was located in a cold climate.

## **III. Comments**

Allen has not been able to provide even one example of this medieval proto-photography process anywhere in art or photographic history, although he has carefully and extensively documented early historical references to lenses and cameras obscura.<sup>3</sup> However, he has not demonstrated that anyone in medieval times ever combined this knowledge with the various sophisticated chemical and physical requirements of photographic science and brought them all together to make the process work. And if someone had, why didn't they create more examples of this unique art form that would have certainly made them famous? Were this truly the case, many other examples of this type of image would certainly exist and photography would be acknowledged as a medieval science rather than one developed in the earliest stages of the industrial revolution.

Allen also expressed to me his more recent belief that the Shroud is actually a composite of *three* different exposures, now concluding that the facial image was made as a distinctly different and third exposure onto the cloth. He writes:

"My own work is confirming... that the details of the head are much more exacting than those of the body and especially the dorsal image (which is by far the worst image). I am surmising that the head was made with a separate lens. The frontal figure (sans head) was made with a lens closer to the one I used originally... and finally this lens was used for the dorsal image which needs no details such as are found on the face, fingers, etc."<sup>4</sup>

He supports this claim by stating that he has recently detected "spherical aberrations" in the facial image on the Shroud which leads him to this conclusion.<sup>5</sup> Obviously, this would make the process of creating the image even more complex for a medieval photographer and even harder to accomplish. Today, even with the advanced state of modern digital imaging techniques, such a perfect composite image could only be accurately accomplished by a highly trained photographic expert. To conclude it was produced by a medieval photographer truly stretches the imagination.

Both the ventral *and* dorsal Shroud images do in fact include many intricate details, although Allen refers to the dorsal image as "by far the worst..." I submit that the dorsal view lacks the equivalent detail only because facial features and fingers are not seen from behind. However, one must not ignore the scores of scourge marks across the shoulders, back, buttocks and legs on the dorsal image, since they in fact are excellent details that have been verified by no fewer than three expert forensic pathologists and anatomists.<sup>6</sup>

During our discussions he also stated:

"...(the Shroud) shows stigmata that reflects the religious mores of the thirteenth and early fourteenth century."<sup>7</sup>

I believe this conclusion is directly challenged by the multitude of expert forensic pathologists who have seriously studied the Shroud and have unanimously concluded that the accuracy of the pathology illustrated on the cloth is precise and completely realistic.

Also, Allen makes no attempt to explain the forensic accuracy of the bloodstains on the Shroud. Since research done by the Shroud of Turin Research Project (STURP) and others has shown that there is no image underneath these bloodstains, we have been able to conclude that they were on the cloth before the image was formed. In fact, it appears that they actually acted to inhibit the image formation mechanism.<sup>8</sup> Prof. Allen's mechanism leaves the critical issue of the bloodstains totally unresolved.

Allen's rationale for his theory is obviously based on his personal acceptance of the carbon dating of the Shroud as medieval and his rejection of the image as a painting. Thus he apparently concludes that, since the Shroud image is known to exhibit certain photographic properties and it does not appear to be a painting, it *must* be a photograph.

In fact, he stated:

"It shows an image that could *only* have been produced photographically..."<sup>9</sup> (emphasis mine).

Although he has created a photographic image on linen cloth, I disagree that the Shroud image could only have been produced in this manner. In fact, his own results provide the best evidence against the validity of this theory. Any attempt at recreating an image like that on the Shroud of Turin must match all of the physical and chemical properties of the original, not just a few.

#### **IV. Comparison**

##### Direction of Light

To artists, accurate duplication of the light falling on their subjects is the primary basis for realism in their results. The history of art clearly documents the attempts made by artists at achieving this through the centuries. It is this relationship of highlights and shadows on a subject that provides the modeling that allows depth, shape and form to exist in a two dimensional plane. Artists must first discipline themselves to "see" the effects of light on their subject, then perfect the techniques for incorporating these effects into their artwork. Without doubt, this task is much simpler for photographers since it is the light itself that creates the result that is captured on the film.

Allen's photographs contain a strong directionality of light. This is obvious from the deep shadows cast on his subject by the strong overhead sunlight he used to create his images (Figure 1). These are clearly seen in the eye sockets, under the nose and chin and below the hands and is unlike the image on the Shroud (Figure 2), which demonstrates no such directionality of light at all. It is further confirmed by the "washing out" of detail in certain parts of the image, most notably the tops of the feet, which received far more light and cumulative exposure than the rest of the body (Figure 3).

When Allen and I discussed this particular property of his image, he suggested that he would

"...have to wait for the right time of year to do this, when the sun is very low in the sky. The result will be a more frontally illuminated image (like the Shroud of Turin)." <sup>10</sup>

In effect, this adds an additional layer of complexity to his theory and taxes the imagination to accept that a medieval photographer would have had the understanding of all of these principles, let alone the knowledge and skills to incorporate them into his work.

In addition, his suggestion that the image on the Shroud is "frontally illuminated" makes it obvious that he has failed to grasp certain image properties evidenced on the cloth. I am specifically referring to the darker areas (on the negative image) surrounding the crossed hands (Figures 2 and 4). If the Shroud were frontally illuminated, this distinctive darkening could not exist, since front lighting would not cast any shadows at all, let alone above *and* below the hands. It is obvious that the darkening around the hands is not a

shadow or the effect caused by directionality of light. Yet other research completed over the last three decades provides a very logical explanation for their existence.

### Dimensional Encoding

The experiments completed by the STURP team and other researchers have provided clear evidence that there is certain dimensional information encoded into the Shroud's image.<sup>11 12</sup> This is often referred to as "three dimensional" data. Of course, that is not technically correct since "three dimensional" implies 360 degrees of information. What we actually see in the Shroud image is an accurate dimensional relief, similar to that created by the bas relief art technique. The result on the Shroud is a natural *relief* of a human form.

This dimensional data was first visualized by the STURP team in 1976 with an instrument known as the VP-8 Image Analyzer, a device used by NASA for mapping image density to vertical relief (Figure 5). It was further supported by the density/relief mapping techniques used by several Italian researchers around the same period of time<sup>13 14</sup> and verified in recent years by the work of an Italian professional photographer and Shroud imaging expert using refined photographic edge enhancement techniques.<sup>15 16</sup> Of course, today it can also be done using some of the latest digital imaging software programs (Figure 6).<sup>17</sup> The fact that all of these techniques yield the exact same result clearly confirms the existence of the dimensional data first visually revealed by the VP-8.

The STURP team concluded that there was a correlation between the density (or darkness) of the image on the Shroud and the distance the cloth was from the body at the time the image was formed. The researchers calculated that the image on the Shroud was formed at a cloth-to-body distance of up to approximately 4 centimeters, but beyond that, imaging did not occur. The closer the cloth was to the body, the darker the resulting image in that area, with the darkest parts of the image being formed where there was direct contact between the two. The image became proportionately lighter as the distance increased until it reached the maximum imaging distance.<sup>18 19</sup>

It is this very fact that explains the phenomenon of the "shadows" surrounding the hands and helps to exclude frontal illumination as a viable possibility for the Shroud image. Since the crossed hands of the man of the Shroud caused the cloth to be raised away from the body, the distance between the cloth and body in the areas immediately surrounding the hands was increased, thus decreasing the image density (Figures 2 and 4). This clearly accounts for the less dense areas that surround the crossed hands in the image and that are identified by Allen as "shadows." This image property cannot be achieved using light or photography.

Since the densities on a photographic negative are not dependent on the distance between subject and film, there is no way that this density information can be incorporated into an image photographically. Consequently, when subjected to VP-8 image analysis, Allen's results do not yield a proper dimensional relief of a human form like that on the Shroud

(Figure 7).<sup>20</sup> This is reason enough to disqualify photography as a possible explanation for the image on the Shroud and is supported by research from a number of independent sources. Allen's conclusions seem to indicate that he does not fully understand these rather complex dimensional properties of the Shroud image.

### Sharp edges

There is one additional facet of Allen's image that is considerably different from the image on the Shroud. The Shroud image has no distinct or sharp edges, yet Allen's body image has a very distinct and sharp edge, much as one would expect from a properly focused photograph. This property of the Shroud reinforces the distance-to-density correlation mentioned earlier. In essence, the distance between the peripheral of the body and the cloth increased gradually until it reached the maximum imaging distance and caused very soft, gradated edges that simply fade into the background. Once again, Allen's image provides the necessary evidence to disqualify photography as the Shroud's image formation process.

## IV. Conclusions

The proto-photography theory proposed by Prof. Nicholas Allen was able to create an image on linen cloth, but not one that duplicated the image properties of the Shroud of Turin. When attempting to provide a viable image formation mechanism for the Shroud, one has to account for all of the image properties, not just a few of them. Allen failed to understand certain important facets of the image on the Shroud of Turin. Much as it truly takes a professional artist to properly evaluate a painting, so too must photography be evaluated by the professional photographer. In the case of the proto-photography theory, other professional evaluations of Allen's theory have reached similar conclusions.<sup>21</sup>

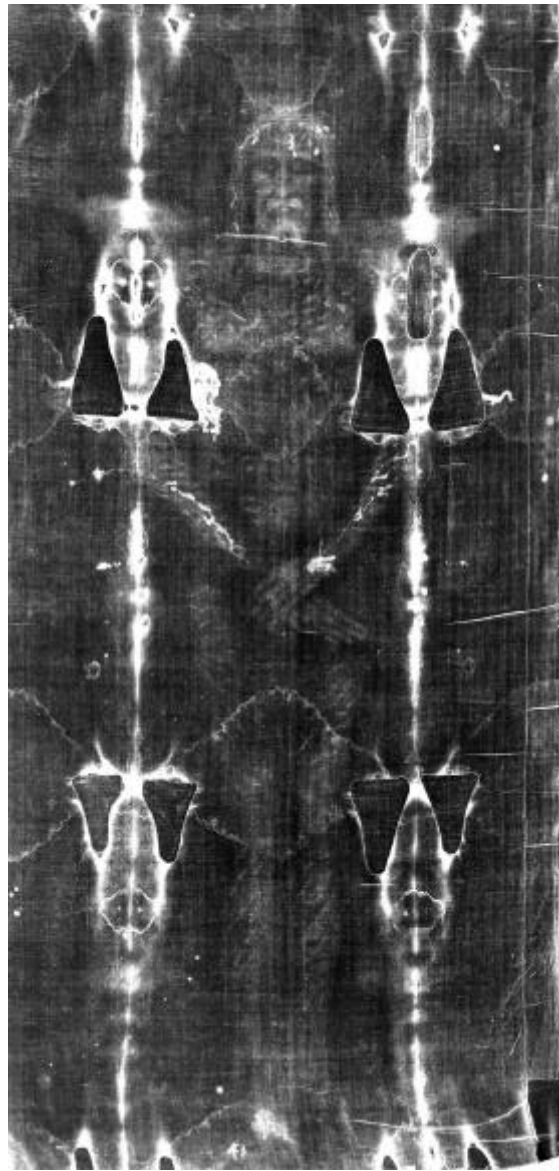
Admittedly, Allen was able to create a viable photographic image using medieval raw materials, but he did so from the perspective of 21<sup>st</sup> century science. Surely raw materials must exist on our planet today that may eventually lead to the development of interstellar travel, but their mere existence is not enough to actually provide us with the technology.<sup>22</sup> That will have to wait until our technological development advances to a much higher level than exists today.

If we accept the argument that the mere existence of certain raw materials is reason enough to believe someone actually used them to invent a technology that was still 500 years in the future, we should start searching archaeological sites around the world for the remains of medieval cellular phones, microwave ovens and nuclear weapons! Just because the raw materials for these highly advanced technologies existed, doesn't mean someone actually created them, particularly before human knowledge advanced enough technologically to truly make this possible.

**V. Illustrations**



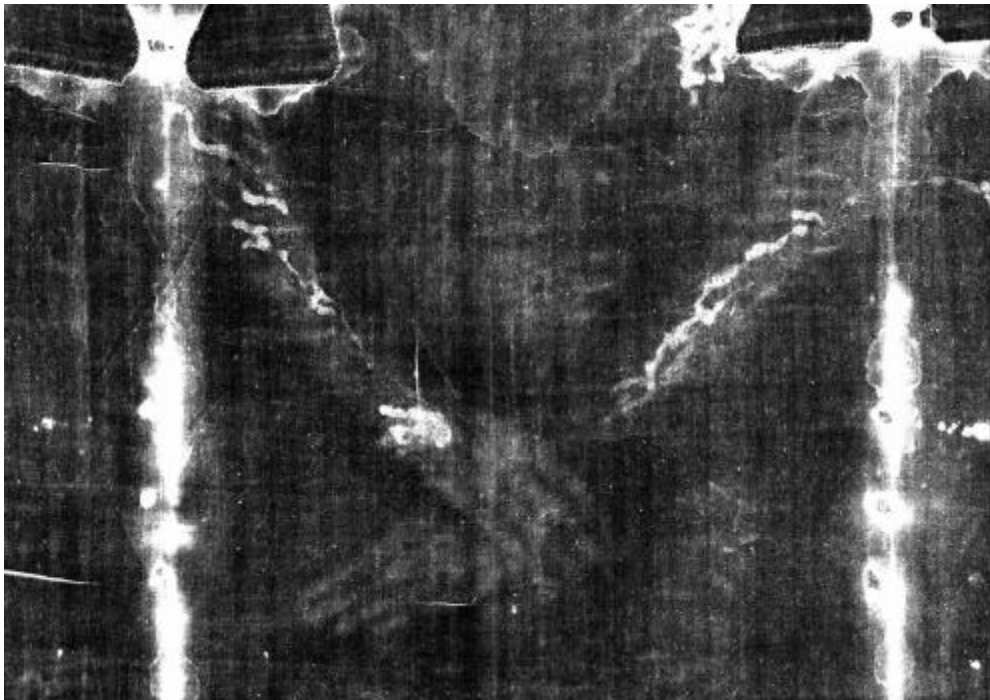
**Figure 1** (© 1995 Nicholas Allen)



**Figure 2** (© 1978 Barrie M. Schwartz)

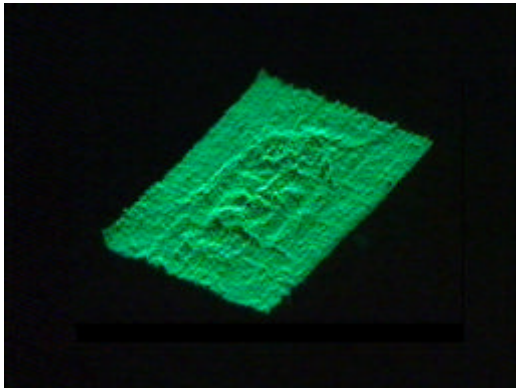


**Figure 3** (© 1995 Nicholas Allen)

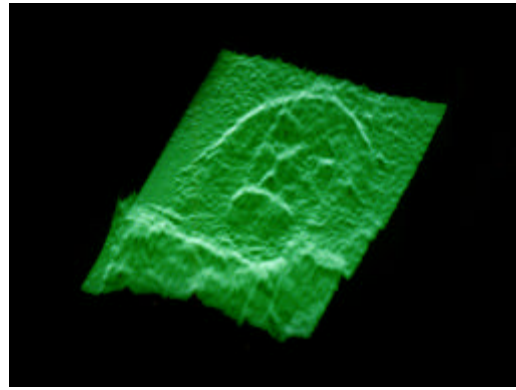


**Figure 4** (© 1978 Barrie M. Schwartz)





**Figure 5** (© 1997 Barrie M. Schwartz)



**Figure 7** (© 2000 Kevin Moran)



**Figure 6** (© 1999 Mark Bruzon)

## VI. Notes

- <sup>1</sup> Allen, Nicholas P.L. - Verification of the Nature and Causes of the Photo-negative Images on the Shroud of Lirey-Chambery-Turin\* [1995]  
<http://www.petech.ac.za/shroud/nature.htm>
- <sup>2</sup> Personal correspondence with Nicholas Allen, May 10, 1999
- <sup>3</sup> Personal correspondence with Nicholas Allen, May 6, 1999
- <sup>4</sup> Personal correspondence with Nicholas Allen, May 10, 1999
- <sup>5</sup> Personal correspondence with Nicholas Allen, May 10, 1999
- <sup>6</sup> Dr. Pierre Barbet, Dr. Robert Bucklin and Dr. Frederick Zugibe
- <sup>7</sup> Personal correspondence with Nicholas Allen, May 6, 1999
- <sup>8</sup> Adler, Alan D. - "The Nature of the Body Images on the Shroud of Turin" [June 1999]  
<http://www.shroud.com/pdfs/adler.pdf>
- <sup>9</sup> Personal correspondence with Nicholas Allen, May 6, 1999
- <sup>10</sup> Personal correspondence with Nicholas Allen, May 10, 1999
- <sup>11</sup> Jackson, J.P., E.J. Jumper and W.R. Ercoline, "Three Dimensional Characteristic of the Shroud Image," IEEE 1982 Proceedings of the International Conference on Cybernetics and Society, October 1982, pp. 559-575.
- <sup>12</sup> Jackson, J.P., E.J. Jumper, and W.R. Ercoline, "Correlation of Image Intensity on the Turin Shroud with the 3-D Structure of a Human Body Shape," Applied Optics, Vol. 23, No. 14, 1984, pp. 2244-2270.
- <sup>13</sup> Tamburelli, G. - The results in the processing of the Holy Shroud of Turin - IEEE Transactions on Pattern Analysis and Machine Intelligence 3, No. 6, Nov. 1981, pp. 670-76.
- <sup>14</sup> Tamburelli, G. - N. Balossino - Nouveau visage tridimensionnel eidomatique du S.Suaire et nouvelles correspondences eidomatiques avec l'Evangile et la tradition - Typescript, Symposium Scientifique International de Paris sur le Linceul de Turin, 7-8 Septembre 1989, pp. 1-4.
- <sup>15</sup> Guerreschi, Aldo, "The Turin Shroud: From the Photo to the Three-dimensional," May 2000 Imaging Conference in San Felice Circeo, Italy.  
<http://www.shroud.com/pdfs/aldo1.pdf>
- <sup>16</sup> Guerreschi, Aldo, "The Turin Shroud and Photo-Relief Technique," May 2000 Imaging Conference in San Felice Circeo, Italy  
<http://www.shroud.com/pdfs/aldo2.pdf>
- <sup>17</sup> Image produced by Mark Bruzon using Bryce software from an original scan of a Barrie Schwartz photograph
- <sup>18</sup> Jackson, J.P., E.J. Jumper, and W.R. Ercoline, "Correlation of Image Intensity on the Turin Shroud with the 3-D Structure of a Human Body Shape," Applied Optics, Vol. 23, No. 14, 1984, pp. 2244-2270.
- <sup>19</sup> Jackson, J.P., E.J. Jumper and W.R. Ercoline, "Three Dimensional Characteristic of the Shroud Image," IEEE 1982 Proceedings of the International Conference on Cybernetics and Society, October 1982, pp. 559-575.
- <sup>20</sup> VP-8 analysis of Nicholas Allen's photograph courtesy of Kevin Moran
- <sup>21</sup> Ware, Mike, "On Proto-Photography and the Shroud of Turin," The History of Photography, Vol. 21, No. 4, pp. 261-268.
- <sup>22</sup> Concept from a presentation by Isabel Piczek