
Science, Art History and the Shroud of Turin: Nicholas Allen's research on the iconography and production of the image of a crucified man

Estelle A Maré

Department of Art History and Visual Arts, University of South Africa
e-mail: mareea1@alpha.unisa.ac.za

66

There are many reasons why theologians would hope that the faint imprint of a crucified man on the Shroud of Turin is an authentic image of Jesus (fig 1). It would obviously prove that the evidence of the Gospels are true, especially that contained in the Gospel of Mark, 16: 44-6, narrating the burial of Jesus:

And Pilate wondered if he was already dead, and summoning the centurion, he asked him whether he was already dead. And when he learned from the centurion that he was dead, he granted the body to Joseph. And he bought a linen shroud, and taking him down, wrapped him in the linen shroud, and built him a tomb which had been hewn out of the rock; and he rolled a stone against the door of the tomb.

We also read in the Bible that the women who visited the tomb on the Sunday after the crucifixion found the tomb empty and the cloth lying inside. Christ's passion is related with some variations in all the Gospels, and, ironically, the bib-

lical accounts have been used as evidence by those who doubt the authenticity of the Shroud of Turin as well as those who are sceptical about it (Allen 1998: 4).

The Shroud that has been kept as a relic in the Royal Chapel of the Cathedral of Turin since 1578 was generally believed to be the shroud that Joseph of Arimathea wrapped around Christ. This relic was declared a fake just over a decade ago, but it is still venerated by millions. Its vicissitudes are well known. For example, it sustained the unsightly scorch marks in 1532 when subjected to an accidental fire when it was kept in the Church of the Holy Chapel in Chambéry, France, and had to be doused with water to save it. Also the scientific research on the Shroud has been well recorded.

In this review it is my intention to evaluate Nicholas Allen's research on the Shroud and his hypothesis that it is a medieval photographic image. In order to do this I will compare Allen's

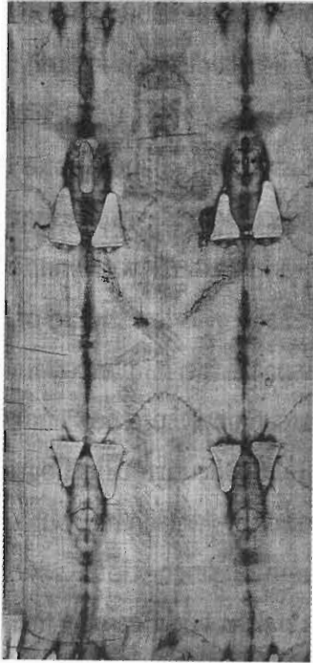


Fig.1: The Shroud of Turin frontal image

work with the accepted interpretation of the relic of which an account appeared in an article published by David van Biema in *Time Magazine* of April 20, 1998. This article was written to commemorate an exhibition of the Shroud. At the end of April 1998 it was once again removed from its silver casket to be exhibited in the nave of Turin Cathedral in a special full-length metal-and-glass display case from which the air was drawn out and replaced by argon. Six days after Easter an estimated three million spectators (among them Nicholas Allen) lined up to view an image on public display again after 20 years. It has been claimed that this image has grown

fainter with each unveiling: the full length portrait of a dead man, which is a relic of the Roman Catholic Church and was also venerated by the Pope John Paul II on May 24 of last year.¹

As recently as 1988 scientific testing and historical scholarship convinced even intelligent people that the Shroud might indeed be Jesus' burial cloth.² Then its keepers allowed one more test. Small samples were distributed to three laboratories for radiocarbon dating. The result was a blow to enthusiastic believers: the linen of the cloth dated no earlier than the late Middle Ages.

Van Biema (1998: 5) summarizes the present interest in the Shroud after the carbon dating proved that it was a fake and all enthusiasts who believed in its authenticity had been dealt a fatal stab to the heart:

Counterintuitive as it may seem in an age when technology has either trumped belief or become its new focus, a fascination with the shroud seems to have not only survived but also flourished. It can be tracked on the World Wide Web, from the official archdiocese site to the home page of the Turin fire brigade (which saved the relic during a fire last April [1997]). It can be discussed at the Centre International

d'Etudes sur le Linceul de Turin in Paris, the Collegamento pro Sindone in Rome (sindon is the Latin word for Shroud), Valencia's Centro Español de Sindonología or with members of variously titled organizations in England and the U.S., whose members happily refer to themselves as "shroudies". It finds its adherents among everyday Catholics and among the exalted as well: during an in-flight press conference in 1989 on his way to Madagascar, when asked if he believed the shroud to be genuine, John Paul II replied, "I think it is".

68

Van Biema expresses surprise at the continuing aggressiveness with which adherents to the Pope's point of view oppose all scientific conclusions about the authenticity of the Shroud of Turin. This is because, according to him, no satisfactory solution has been offered to explain how the image of a crucified man got onto the linen cloth in the first place. Since scientists themselves remain mystified about the mysterious imprint and their criticism of solutions offered are continually disproved as speculation. Mention could be made of some of the evidence offered by historical documents and modern scientific theories.

The first authentic document in which the Shroud is mentioned is a letter by Bishop Pierre

d'Arcis to his Pope in 1389. The object he refers to, which had occupied a place of honour in the small town of Lirey since the 1350s is a linen cloth with a twofold image of one man, that is to say the back and the front, showing wound marks. It annoyed d'Arcis that people were rumouring that it was the shroud of Christ while a predecessor of his had ascertained that the image was cunningly painted and not miraculously wrought. Documents left by 16th century nuns described in detail the four metres long, herringbone-twill linen cloth which bear the image of a naked and bearded man about two metres tall, hair in a loose ponytail, back apparently scourged with a multithonged whip, and hand "closed modestly" before him [presumably to cover the genitals]. The image was not so faint that, d'Arcis excepted, people doubted who it was. Because of its presence believers made pilgrimages to Lirey. Later the Shroud came in to the possession of Italy's royal Savoy family and was moved to Turin. The church granted it its own feast day and offered public showings which attracted great throngs who venerated it as a relic.

A photograph of the Shroud was taken, on May 28, 1898, by Secondo Pia, a councillor of Turin. On the photographic plate faint details of the image on the Shroud was enhanced and Pia felt

as if he was looking at the face of Christ. Subsequent exposures of the body image revealed details that seemed to prove the image to be that of a crucified man, such as the wound marks on the wrists, and feet, the lance mark in the chest. Bloody rivulets which a crown of thorns may have caused are equally evident as in the crucifixion wounds. It is the actual presence of blood on the Shroud that inspired Ian Wilson's latest book on the Shroud (1998) in which he writes: "The clear implication was that the shroud itself was, in effect, a photographic negative that had been waiting dormant, like a pre-programmed time capsule, for the moment that photography's invention would release its hidden true 'positive'."

After Pia's discovery a century ago the Shroud has been removed from the casket for general viewing and inspection by more than two dozen scientists. In 1987 the Roman Catholic Church allowed scientists from the US, Italy and Switzerland to perform tests on the Shroud. For this purpose pieces of adhesive tape were also used to lift material from the surface for later inspection. The tests included photo- and electron microscopy, X rays, spectroscopy, ultraviolet fluorescence, thermography and chemical analysis. It was generally concluded that the Shroud had come into direct contact with a body and

that the blood stains were probably real. However, the figure could not have been rendered by any artistic method either of the Middle Ages or of Jesus' time.

Speculation then led to the publication of more books and articles on the Shroud than ever before. And the remarkable fact that even before this century had commenced literally thousands of journal articles and books on the Shroud had been published.³

Then a new era in Shroud research started on April 21, 1988, when the Italian microanalyst Giovanni Riggi was allowed by the authorities to cut a 10 mm by 70 mm strip of linen from the Shroud, well away from its central image and any charred or patched areas. This strip was subdivided and the samples distributed to representatives of research laboratories in Zurich, Oxford and the University of Arizona in Tucson. Each of them performed a series of radiocarbon measurements on their sample. In October 1988 the Oxford team disclosed their finding, an estimation that the linen dated from 1260 to 1390. In an article published in *Nature* (16 February 1989), written in collaboration with the two other teams it was stated that radiocarbon-dating proves that the Shroud is medieval. Nuclear physicist Harry Gove stated that the

odds were about one in a thousand trillion that the Shroud had been woven in the time of Jesus. In short, all those scientists involved in the testing made blatant statements about the impossibility of the Shroud's authenticity.

Questions about the image and the cloth remained. In this regard Ian Wilson, who has written three books about the Shroud is reported by Van Biema (1998: 53) as having said: "If it were proved fake tomorrow, it wouldn't shake my faith. The fact that it might have touched the body of Christ doesn't move me at all. It's just knowing that the image exists. I would be as interested in a 14th century cloth, if I could find the artist who made it." Wilson points out that the blood flows "following the laws of physiognomy" (Van Biema 1998: 53), unknown to doctors or painters either in Jesus's time or during the Middle Ages, could not have been faked. Against those who suspect the stains are late additions because they have remained reddish, Wilson quotes an expert on ancient DNA who says that blood from a traumatic death can retain its tint for millennia. After various other arguments, too wide-ranging to quote in full, Wilson concludes that to try to interpret the image on the Shroud as the product of an unknown medieval faker is like arguing for the Taj Mahal being a mere geological accident.

Doubts remain about the scientific testing of the Shroud. Alan Adler, a chemist at Western Connecticut State University who has worked on the Shroud, believes that the tested samples were water-stained and that clean samples should be tested. Besides, infrared spectroscopy indicates that the sample's threads differ from those in the rest of the Shroud. Adler insists that more than one sample should be tested.

A Russian scientist named Dmitri Kouznetsov, supported by John Jackson, who is now the co-director of the Turin Shroud Center of Colorado, points out that the entire Shroud's exposure to a fire in 1532 could have thrown off the radiocarbon dates. Radiocarbon experts, however, are not inclined to believe this and refute the misgivings about water stains on the test sample. It should furthermore be pointed out that the test sample was chemically and mechanically treated to rid it of contaminants.

Another challenge to the radiocarbon dating came from Dr Leoncio Garza-Valdés, a San Antonio pediatrician interested in microbiology and archaeology. He came up with the theory of a bioplasmic varnish caused by bacteria on the Shroud which would have influenced the dating drastically. He travelled to Turin, examined the Shroud under a microscope and did indeed dis-

cover a bioplastic film. After having been given strands of the Shroud he investigated further and concluded that the dating might be 1300 years out. He postulated that the vinegar Jesus was given on the cross could have caused the film. To this scientists responded by saying that it is absurd to make this connection and the first team of scientists who did the radiocarbon dating remain sceptical of Garza-Valdés' claims because they assert that their samples were clean.

So, in the end, the image on the Shroud still remains unexplained. The faithful, the scientists and also art historians have a vested interest, not in what Jesus really looked like because we will never know, but in the image on the Shroud itself, its aesthetics, iconography and production. This is the appropriate point of departure for an evaluation of Nicholas Allen's researches on the Shroud as a photographic image.

Already in his thesis (1993a) Allen proved that his skills and talents as an artist and art historian are complemented by an interest in science and an aptitude for exactitude and a determination to reveal the truth. He himself dedicates his book, entitled *The Turin Shroud and the crystal lens: testament to a lost technology* (1998), to "all those who seek the truth, regardless of the

consequences or its threat to their comfort zone". In his foreword to the text Bert Olivier lauds Allen for examining worn out, unsatisfactory explanations and taking a new look at the phenomena in question. He also lauds Allen for the elegant simplicity of his hypothesis, "which is matched only by the persuasiveness of its explanatory power".

In the author's preface Allen recalls that, when he was a boy, in 1969, his parish priest had explained to him that the framed, green-hued positive image of the Shroud of Turin which hung on his lounge wall was the Fifth Gospel of Jesus Christ, or corporeal evidence for the doubting Thomases of the modern world that Christ had indeed suffered, died and ultimately risen from the sepulchre. Since his thirteenth year Allen kept abreast with the opinions of the scientific commissions which repeatedly attempted to unveil its secrets. After the carbon-dating tests in 1988 which supported the argument that the linen on which the imprint was made was produced sometime in the last thirteenth century he finally came to the conclusion that as far as the Shroud was concerned there were, to put it quite plainly, no experts. "Rather there existed a proliferation of opinionated individuals who often used whatever means were available to promote their particular

hobby horse" (1998: xiv). He was motivated by the same belief as Pierre Barbet who declared in 1953: "If [the Shroud] be the work of a forger, he must have been a super-genius as an anatomist, a physiologist and an artist, a genius of such unexcelled quality that he must have been made to order" (1998: xiv). Then Allen (1998: xv) asks the question which set his researches on the right track: "Now surely, if this image was nothing more than the modest work of medieval men, then why couldn't twentieth-century men duplicate their labours?" Indeed, the strange image-making technique had duped those who would set themselves up as authorities on the subject. By 1988 Allen (xv) had convinced himself that the answer to the Shroud's secret had to be obvious - "so obvious that when we comprehended it at last, we should wonder for quite some time, how our supposedly superior twentieth century civilization could have been so persistently dull and witless". Quite rightly, Allen (1998: 5) also decided that the tendency to justify the Shroud solely or partly in terms of Scripture, has been one of the many stumbling blocks to any alternative attempt at resolving the mystery of the Shroud's image.

With some financial help from the Port Elizabeth Technikon where Allen teaches and the

University of Durban-Westville where he registered for a doctoral thesis on the Shroud, he travelled to Rome to read in the Bibliotheca Apostolica Vaticana and the Hertziana. Thereafter he also read in the Bibliotheque Nationale, Paris and the British Library, London.

Allen's scrutiny of the evidence focussed first of all on the medical information, which he deals with in the first chapter, entitled Fabricating a mystery". All the medical practitioners and pathologists who investigated the Shroud were struck by the naturalistic detail of the image of the crucified man. No other images of any culture before 1357 portray anatomy in such lifelike detail. Most investigators listed the same stigmata imprints, but in the 1930s Dr Pierre Barbet claimed to prove without a doubt that the image is that of a crucified man with the nail marks through the wrists (and not through the hands as suggested in the Gospel of St John).⁴ Barbet proved that if a nail passes through a point in the metacarpals known as the "space of Destot", the thumb will contract over towards the palm of the hand. The Shroud appears to show this same feature on the figure's right hand (that is in the negative image) which covers the left one. Barbet (1953: 73), as nonbeliever, then jumped to the conclusion that: "This image is enough proof that nobody has touched

the Shroud except the Crucified Himself." A mystery has indeed been fabricated, as the caption of Chapter I indicates.

In Chapter II, "The frustrated sceptics", Allen relates the history of the scientific investigation of the Shroud. He gives a detailed account of the first scientific tests performed since 1978 when the legal owner of the Shroud, King Umberto II granted permission for the relic to be put on display for six weeks. It especially details the carbon-dating and the analysis of the rivulets of blood present at the marks of the figure's "stigmata". Allen pertinently mentions the fact that seeming paradoxes became evident after Pia's discovery of the Shroud's photographic qualities - mainly that a photograph of the image has the qualities of a negative. However, scientists refrained from the obvious conclusion because photography was only invented in c 1801. Also details such as the discovery by John Jackson and Eric Jumper of the US Air Force Weapons Laboratory discovered that photographs taken by Giuseppe Enrie in 1931 contained three-dimensional information. In other words, Allen explains (1987: 27), the brightness of the image is directly proportional to the distance of the body from the cloth. He quotes KE Stevenson and GR Habermas (1981: 63-4) who explained: "The mystery was that parts of the body not in

contact with the cloth also appear on the image, and the brightness of these non-contact areas varies according to their distance from the cloth."

Among the ten main characteristics that Allen lists, the superficiality of the image is listed first. The image is essentially the discolouration of the uppermost fibres of the Shroud's fabric. The image is a negative which is visually coherent as a positive photograph when its polarity is reversed. Furthermore, the image is highly detailed; no pigment was applied to the Shroud; the process that formed the image operated in a non-directional fashion; the yellow colouration composing the Shroud image cannot be dissolved, bleached or changed by chemical agents, and the image is water stable and was not affected when it was doused in 1532.

Given these and other characteristics, Allen discredits the various image-forming theories, such as painting/dyeing/staining theories, direct contact theories and chemical action theories. Since all the scientific theories are inadequate in explaining the authorship of the image on the Shroud, most supporters of the relic's claim to being the burial cloth of Jesus Christ, credits it with a divine origin. Only the carbon dating, c 1260-1350, could convince some of the sup-

porters that the relic is a forgery - one which was produced for the sole purpose of deceiving the Catholic world of the late thirteenth century, an idea expressed by I Smullen (1988: 112).

In Chapter III, entitled "The paradigm shift", Allen describes the serendipitous way in which he suddenly realised that what he was struggling to come to terms with was not outlandish at all. What he was in fact trying to imagine, on the strength of the characteristics of the image on the Shroud, was that it is a photographic imprint. Allen decided (1998: 41-2) that the Shroud actually exists and therefore bears testament to some form of technology, albeit unknown or even forgotten; that it has the attributes of a modern photographic negative; and was manufactured sometime between the date of Jesus' death and 1357 AD. He furthermore decided that, after one hundred years of futile research and wasted time and money it was time to do "a little lateral thinking" (1998: 44) - that is lateral thinking about photography and the abilities of medieval technicians and scientists. Could there possibly be any historical evidence of persons knowing about such devices as the *camera obscura* and/or understanding the nature and cause of pinhole images before, 1357?

In Chapter IV the historical evidence is researched. First of all information about the *camera obscura* was sought since this was a prerequisite to producing any photographic image (permanent or otherwise). Allen's researches thus took him in a direction not explored by any other sindonologist. The research into the historical evidence needed led Allen into a well-documented field, but he came across some contradictions regarding the scientific and artistic discoveries regarding the *camera obscura*, the way one sees and the structure of the human eye. Sources such as Girolamo Cordano of Milan who in 1550 gave a description of a *camera obscura* with a bi-convex lens fitted in its aperture; Daniel Barbaro who in 1568 recommended the lens, but also that the aperture be made in a diaphragm; Leonardo da Vinci who described the functioning of the *camera obscura*; Della Porta who used no lens in his device but a concave mirror in front of the aperture; Chinese and Islamic evidence, and also that of Roger Bacon. Allen's conclusion is that both practical and theoretical knowledge pertaining to pinhole images was available in the Muslim east before 1039 AD - a full three centuries before the Shroud was produced.

The historical evidence about light sensitive chemicals is more complicated. Did persons liv-

ing before 1357 know about light sensitive chemicals necessary to produce a photograph? After all, Allen (1998: 61) notes that the earliest recorded experimentation which involved a light sensitive chemicals (silver chloride) was undertaken by Robert Boyle in the seventeenth century. Allen deals in turn with the properties and knowledge of silver chloride, silver nitrate and silver sulphate and gives evidence that - in theory at least - three light sensitive reagents were available to any alchemist living in the thirteenth century.

Then Allen's most challenging quest became the one for magnifying glasses. The invention of glass and the subsequent manufacture of lenses may be traced back to predynastic Egypt, the Ancient Near East and the Aegean. Ever since Roman times Venice was renowned for its glass production and vessel-glass was already being made by 1090. By the end of the 13th century spectacles were in use in Northern Italy. Knowledge of lenses is recorded in Leonardo's writings and Allen (1998: 75) admits that the Shroud was produced by someone like Leonardo - not Leonardo himself, because this theory Allen (1995b) refuted, because the person of genius must be found in the years shortly before 1357 (see also 1998: 168-79). No serious attention was paid to lenses and mirrors during the Middle

Ages; the world had to wait until the Renaissance before scholars became interested in such things and published their findings extensively, as Allen (1998: 78) points out, fourteen editions were produced between 1486 and 1583 of an early form of encyclopaedia on the subject. The relevance of this information is that such esoteric knowledge required when the Shroud was manufactured (c 1280-1320) was certainly not broadcast to the world at large.

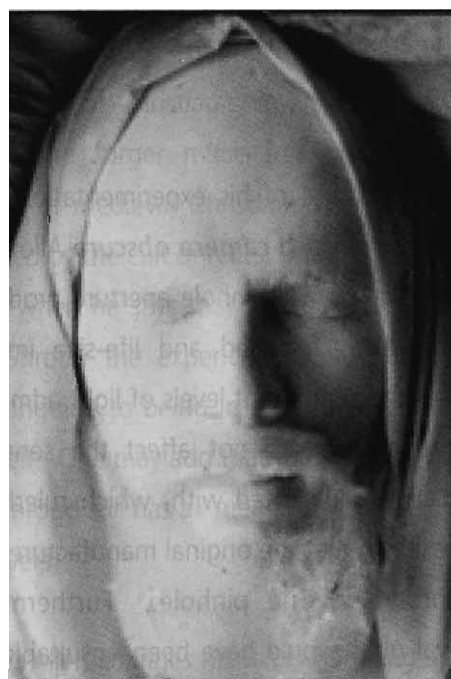


Fig.2: The plaster cast employed as the 'corpse' for the production of the Shroud of Port Elizabeth

Allen satisfied himself that it was possible for persons living in the late thirteenth or early fourteenth century to have had access to the knowl-

edge and apparatus necessary to produce a photographic image (permanent or otherwise). Obviously the *camera obscura* had to be large, within which a long strip of light-sensitised material could be suspended vertically. On this strip the image of a sun-illuminated cadaver (or body-cast of a person) was focussed either by means of a pinhole or a lens. The technicalities of the suspension of the subject and the exposure for a frontal and dorsal view became for Allen a lengthy process in his endeavour to replicate the image on the Shroud by using a body-cast (fig 2).

During the course of his experimentation in a specially constructed *camera obscura* Allen discovered that a small pinhole aperture produces an acceptable, focussed and life-size image. However the insufficient levels of light admitted into the camera did not affect the sensitive chemicals experimented with, which ruled out the possibility that the original manufacturers of the Shroud used a pinhole. Furthermore, medieval glass would have been unsuitable for use as a lens because of impurities. Optically clear glass was most probably not obtainable at the time. Allen concludes that the medieval forger most probably used optical quality rock-crystal (quartz) which allows the transmission of ultraviolet light. This light had to fall on the

material treated with light sensitive chemicals in order to cause an image on it.

In his experiments to prove how the Shroud was manufactured Allen at all times set himself the aim to achieve an image which can be compared with that on the Shroud. Therefore he added a beard and moustache to the first plaster head he used. In this he succeeded and the negative images appear exactly like the image on the Shroud. The following characteristics correspond exactly: the image is strictly frontal, the eyes appear owl-like, the image contains no pigment but is caused by the oxidation of the uppermost fibrils of the material. Furthermore the image is permanent; it cannot be removed by standard chemicals except household bleach. Allen (1998: 90) calls the Shroud a "very elaborate suntan"; it is an image without directionality and three-dimensional in that the intensity of the features are proportional to the distance of the original corpse from the screen during exposure. Allen's attempt at reproducing the face was successful.

By the end of 1991 Allen knew with absolute certainty that he was right about the manufacture of the Shroud image. That inspired him to manufacture a full-length shroud, which he refers to as the Shroud of Port Elizabeth (fig 3).

However, many unforeseen problems and insights occurred. He deals with issues such as the decomposition factor of the body used for the Shroud photograph, the focal length of the quartz lens, the linen strip used, the distance of the lens from the subject, the choice of silver sulphate versus silver nitrate, and so forth.

Allen relates the vicissitudes of the experiments in the full-scale *camera obscura* with admirable clarity. He produced the first shroud, which he dubbed the Shroud of Port Elizabeth late in 1992. If a photograph is taken of this Shroud, a mysterious positive image of the plaster corpse results. It compares very well with those taken by Pia and Enrie of the Turin Shroud. Allen subsequently continued his efforts in perfecting the manufacture of shrouds, with better results, that is achieving closer approximations of the real one. The medieval "photographers", according to Allen (1998: 109) concluded their work on the Shroud by trickling on the blood flows on those areas of the body image associated with nail and thorn wounds on the body of the crucified Jesus. And, curiously enough, the application of the blood trickles was done in accordance with the conventions found in the art of the late thirteenth century.

In the second last chapter, "Speculations", Allen

asserts that if the Shroud of Turin is indeed the only example of a form of medieval photography available to us, we have little choice but to reassess our present understanding of various disciplines, especially the history of photography and the history of art. However, the information about the photographic production of the Shroud does not shed light on the forger, but Allen nevertheless initiates a process of reassessing the history of art and photography. While the first five chapters contain evidence that is verifiable, the last chapter relates the symbolic expression of Christianity in art and the way in which the forger made use of conventional beliefs of medieval Christians who were brainwashed by the cult of relics. Allen (1998: 117) is right when he says that to medieval viewers of the Shroud the experience would have been consanguine to being in the presence of Christ himself. One may add that the effect of viewing the Shroud still has a "medieval" effect on many believers!

When Allen changes his hat from being a scientist to being a speculative medievalist who has an interest in humanist iconography, he becomes the art historian who has insights as valuable as his scientific ones. One acute observation concerns the naturalism of the image on the Shroud. According to Allen it is intensely

reminiscent of the development of human suffering and compassion; a most evident development of Italian painting between c 1235-1335, for example in paintings by Berlinghieri (active 1235), Cimabue (active 1285), Duccio (active 1311), Giotto (active 1320) and Martini (active 1340). Allen especially notes the increasing emphasis on blood flowing from the stigmata and the marks of the crown of thorns in depictions of the crucifixion.



Fig.3: A negative photograph of the first 'fixed' version of the so-called Shroud of Port Elizabeth

In the theology of the thirteenth century (mentioned above) christocentric organizations such as the Franciscans, the Clarisses and even the

Knight's Templar, modelled their lives on the activities of the historical Jesus. It therefore comes as no surprise that the fakers of the Shroud designed an image of The Man of Sorrows. Nevertheless, because of its unique composition, the image on the Shroud cannot be categorized according to style as either Byzantine, Italo-Byzantine or Gothic; it also remains a moot question whether it should be considered as an icon or a relic, according to medieval criteria. However, we can now, with the benefit of modern photography see it as a three-dimensional, highly naturalistic, positive image and Allen (1998: 134) makes the point that, in this modern guise, the Shroud concurs with many aspects of western art: "It is especially typical of the more humanistic products of the late thirteenth century, when depictions of the crucifixion, both visual and textual, increasingly emphasized Christ's physical and human suffering on the cross. In particular, the stigmata, the wound in the side and the flows of blood (especially along the forearms) become increasingly more pronounced."

Allen's speculates about medieval hylomorphism, that is a world view based on the doctrine that primordial matter is the first cause of the universe. He argues that all of the substances which are critical to the success of the

technique of making the photographic image on the Shroud have direct symbolical correspondences with the fundamental principles and tenets which underpin the Christian concept of the intercession of Christ and the atonement of sin. For example, the square *camera obscura* may be viewed as a symbol of the earth and the darkness inside could refer to man's sinful state. The linen cloth refers quite literally to Christ's burial cloth, but linen is also a symbol of purity. The crystal lens may be an overt Marian symbol, since the Virgin was designated the "mirror without blemish". Silver is also a symbol of purity and a clear conscience. The nakedness of the crucified man signifies man's separation from God and probably also impurity. Even the urine or diluted ammonium hydroxide used to remove the unexposed silver nitrate from the Shroud has its place in the symbolic scheme: it is a life indicator and probably employed in the confines of the *camera obscura* since a man may not urinate by the light of day.

What then are Allen's views about the *raison d'être* behind the Shroud? It was most probably made for an orthodox Roman Catholic, and was most probably seen as proof that Jesus had died a physical death. To whom the crucified body or mutilated corpse belonged cannot be answered: most probably the pigtail is an indicator that it

was a Jew, possibly even a rabbi. Why was a photographic technique used instead of more traditional approaches? The two reasons that Allen offers are that it guaranteed a naturalistic and humanistic image and people may have believed it to be divinely sanctioned. As an art historical image it nevertheless remains difficult to categorize.

Allen finally believes that the Shroud was not intended for the eyes of the vulgar. He is convinced that this incredible product of medieval ingenuity was originally intended for the nobility or a closed religious community. However, it turned out that the first owner was a very minor French noble, Geoffroi de Charny, liege lord of Lirey and Savoy. Many facts about his life are documented, but he is best remembered for his heroic death in a battle against the English on the field of Poitiers when he shielded his King, Jean II, who was captured. Immediately after his death Geoffroi's widow exhibited the Shroud in the wooden collegiate church at Lirey in or about 1357. Did the Shroud indeed belong to Geoffroi and did his widow exhibit it for financial survival in her war-ravished lands?

Also on matters like the geographical site of the Shroud's production only circumstantial evidence is available. Allen argues that Venice was the

place. As usual the data he supplies and the conclusions he draws are persuasive. Still, we simply do not know for sure.

In the concluding chapter, Allen (1998: 180) repeats his main contention, "that if the Shroud of Turin is approached from a phenomenological perspective, it will be possible to ratiocinate the process by which it came into being". Allen did this admirably and I concur with Ian Wilson's statement in the blurb on the back cover of the book: "Professor Nicholas Allen's experiments to try to understand the Shroud's image are in the finest tradition of Shroud research: challenging, absorbing and absolutely fascinating. I consider his replication of the Shroud 'photograph' immensely superior to that of any other researcher in this field. Most warmly recommended." Nevertheless, Wilson does not give Allen full credit for his achievement. His main objections to Allen's photographic hypothesis are, firstly, the fact that a body had to hang in the sun for four to eight days during the *camera obscura* process which, besides the unbearable smell it certainly would have caused, does not take the effect of *rigor mortis* into consideration, and would not have caused an image suggestive of a man lying down; secondly, that a plaster cast could have not been substituted for a dead body because casts were made only dur-

ing the Renaissance; and thirdly, that a photographic process does not account for the real blood on the cloth. Wilson's objections reveal a biased reading of Allen's account of his attempts to reconstruct the medieval process by means of which the Shroud was manufactured.

In fact, Allen carefully argued all these points under the heading "The decomposition factor" (1998: 92-7). He concedes that the exposure time of the "body" was the most problematic. Depending on the outcome of the choice between a pinhole exposure or the use of a quartz lens, he "would know for certain whether an actual corpse, a preserved corpse or a cast taken from a corpse/living subject had been employed" (1998: 92). His argument that a freshly deceased individual was the subject of the *camera obscura* is based on the fact that a cast would have been difficult to produce and anatomical detail would have been eliminated. The Shroud could have been made in a mountainous region where ultra violet levels are high and the air cool and dry. This would have made the subject more reflective, kept the body temperature down and retarded the decomposition process. Allen estimates that the estimated time of six to eight days for frontal and dorsal images could be reduced by 80% if the diameter of the quartz lens could be increased from 40

to 80mm. He states explicitly: "Within this scenario an exposure which had taken 32 hours (i.e. four days) could be reduced to six hours (i.e. less than one day), by doubling the diameter of the aperture or lens" (1998: 94). That is why Allen specifically mentions the "crystal lens" in the title of his book.

Regarding Wilson's objection to the fact that the images on Allen's shrouds do not suggest that the man is lying down, one may point out that neither does the image on the Shroud of Turin. If the Shroud had covered Christ's dead body the imprint of the face and other body parts, by means of body vapour or whatever process, would have been greatly distorted, which is not the case.

Finally, Wilson rests his case on the evidence of the blood on the Shroud. The fact is that the Shroud shows neatly, unambiguous blood flows (not a drop out of place). In answer to those who believe that the Shroud is authentic because of the blood flows on the image of the forearms, the wound in the side and the blood drops on the temple, one may say that dead bodies do not produce nice neat blood flows; they only leak, purge and decompose.

I need not belabour the point that in his criticism

of Allen's hypothesis, Wilson probably skipped Allen's account (1998: 109) of how the forgers painted on the blood flows with real blood: Indeed, the blood that appears on the present day Shroud was freely trickled on those areas [of the body image] associated with blood flows [from Christ's crucified body] and the site of the nail and thorn wounds. "The application of blood was done in accordance with the [artistic] conventions of the time - that time being the late thirteenth century." Allen provides evidence that all the blood flows on the Shroud are in keeping with a Catholic post 1200 iconographical visual interpretation of the Biblical account of Christ's death.

Indeed, Allen's research is immensely superior to any other research on the manufacture of the Shroud because he could prove conclusively that all its characteristics are accounted for in his photographic hypothesis. In summary these are repeated (from Allen 1998: 38-9): (1) It is superficial, it is essentially the discolouration of the uppermost fibres of the linen threads of the Shroud's fabric; (2) it is highly detailed; (3) it is thermally stable and was not affected by the heat of the 1532 fire; (4) it was not caused by pigment; (5) its intensity varies according to the distance of the body from the cloth; (6) it is a negative which is as visually coherent as a posi-

tive when its polarity is reversed; (7) it is without direction; (8) the yellow colouration composing it cannot be dissolved or changed by standard chemical agents; (9) it is water stable since it was doused with water to extinguish the fire in 1532; and (10) it is, when viewed in its positive aspect, more illuminated from above than below.

It is emphasised that all these characteristics of the image on the Shroud of Turin are all clearly discernable on the shrouds he himself manufactured in a *camera obscura*, using a quartz lens. I conclude: *Quod erat demonstrandum, demonstravit.*

Notes

1 Allen (1999) refers to Dr Mill's theory which predicts that the image on the Shroud of Turin will become fainter and eventually disappear, but quotes the counter-theory proposed by Knight and Lomas (1997: 238) who wrote: "It has been recently reported that the image on the Shroud of Turin is mysteriously fading away. This is pure hyperbole. The image has already been shown to be caused by oxidised fibrils. All esters, such as paper, linen, cotton, etc oxidise naturally, unless stored in an oxygen free envi-

ronment. The fibrils making up the non-image areas of the Shroud have been slowly oxidising since the time of its manufacture (i.e. visually, they have steadily become darker), as have those structurally altered (oxidised) fibrils which give rise to the image areas. If anything, all the fibrils which constitute the linen cloth, will increasingly, become more and more oxidised and thus will increasingly appear darker to the eye. Eventually a situation might well arise where the contrast between image and non-image areas will become so slight as to render the image invisible. There is nothing mysterious about this process and if stored in a gas such as argon, the Shroud will retain its present appearance indefinitely."

2 An example of scholarly work done to reconstruct the features of Christ from the Shroud of Turin and various other shrouds such as the Veronica of St Peter's in Rome and the Volto Santo of Manoppello, is the research by Bulst, a previous director of the Catholic Centre for art in Darmstadt, and Pfeiffer, a professor in Christian Art History at the Papal University Gregoriana in Rome (1991).

3 Between 1898 and 1902 an estimated 3500 articles, treatises and books had already been generated in response to the heated debate

concerning the Shroud's authenticity and the possible causes for its seemingly miraculous image. This information was found by Nicholas Allen in the Vatican library in a small booklet produced by the famous nineteenth-century historian Canon C Chevalier.

4 All we can really say by reading the Gospel account (specifically John, since no mention of nails is made by Matthew, Mark or Luke) is that Jesus was scourged, had a crown of thorns placed on his head, that he was crucified, had nail wounds in both hands, was pierced in his side and that he appeared afterwards to Thomas.

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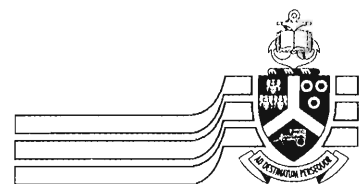
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