

THEOLOGY, PHILOSOPHY AND RELIGION REVISIT THE SHROUD IMAGE FORMATION BY RADIATIVE PROCESSES

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ABSTRACT

For some decades several scientists have claimed the formation of the Shroud body image by the radiative hypotheses. These proposals have as a start the emission, by the corpse wrapped in the burial linen, of proton or electromagnetic radiation with the wavelengths of the far ultraviolet. From a theological point of view, these hypotheses must be discarded. In fact, the above proposal foresees a transcendental beginning, followed in compliance with the natural laws, hoping to find a result that justifies their initial hypothesis. The Miracles are done only by God, the Omnipotent. Also for Thomas Aquinas, a Doctor of the Church, the Divine intervention is instant. Therefore a description of these transcendental events, step by step, it is impossible. In line with Theology there is also the Ockham's thought. It is not a physical law but a philosophical razor that still enjoys great consideration in the scientific world. Used in the case of Shroud Body Image Formation, the "Ockham's razor" does not agree with the radiative hypotheses. The same occurs with the Religion. In fact, reading The Gospels, The Act of Apostles and The Letter, we must accept the initial absence of image.

Keywords: Shroud; body image formation; protons; UV radiation; theological observation; philosophical razor; Religion;

INTRODUCTION

Due to the authority of some scientists, their ideas and the result obtained regard the Shroud Body Image Formation by radiation, we have decided to revisit the reached conclusion. In fact, never as in these last decades, the interaction between radiation and matter (for example, linen) has been present in the minds of many scientists determined to investigate two important characteristics, still unanswered, of the Shroud of Turin: the age of the linen and the mechanism of the Shroud body image formation.

For the first characteristic, the interest is addressed towards the neutrons that are particles devoid of electric charge with mass slightly higher than the one of the protons (Antonacci, 2010; Lind et al., 2010). For the second characteristic, the attention is addressed towards the proton, and electromagnetic radiations (Carter, 1984; Antonacci, 2000 and 2012; Rinaudo, 1993 and 1994; Di Lazzaro et al., 2011 and 2012; Fanti, 2010 and 2011). These

scholars believe, with their attempts, to furnish noticeable results on the two above questions.

In the case of particles, it is hypothesized the breaking of deuterons, present in the corpse, in neutron-proton pairs. The deuteron, symbol ${}^2\text{H}$, is one of the isotopes of the hydrogen with a bond energy of 2.2 MeV. Therefore, this nucleus is stable. Now, because the surface of the corpse was in the same chemical and physical state (Gilbert and Gilbert Jr., 1980; Mottern et al., 1980; Heller and Adler, 1981; Pellicori and Evans, 1981; Schwalbe and Rogers, 1982; Jumper et al., 1984) all the protons must have been emitted with the same energy. So, in the region of body-sheet contact, the protons spend their energy to penetrate the linen until it stops. Differently in the other regions, due to the absorption of a thickness of air, the energy is not sufficient to achieve the same depth of penetration. Therefore, they are not able to reach the result.

In the spectrum of electromagnetic radiation, the choice lies in the far ultraviolet. In fact, with higher λ values there is not sufficient energy to penetrate the linen; with a lower λ value the involved energies would be so great that they could not respect the parameters related to the depth of the Shroud image. So, by a pulsed excimer laser (ArF) that emits radiation with $\lambda = 193$ nm (Di Lazzaro et al., 2011 and 2012), it is possible to obtain a Shroud-like coloring on a piece of linen with the right hue. However, the color does not appear immediately but after, natural (about 1.5 years) or artificial, aging. Therefore, the one obtained, It is a latent coloration. We remember that also on the Shroud of Turin the body image is latent. Other interesting articles that need to be considered are the ones of Fanti (2010 and 2011) where, by corona discharge, a linen is irradiated with ultraviolet radiation and heat. However, as for the protons, also for the ultraviolet radiation it should not be possible to yield, on a linen sheet, an image with all the properties of the one on the Shroud of Turin (Fazio, 2021).

However, here it is necessary to specify that the latency time (a necessary feature to understand the Shroud Body Image formation) cannot be so short because the image should have been noticed by the Apostles. In such a case these last ones, as ancient chronicles, would have written about an extraordinary Image of Jesus Christ on its burial linen. Furthermore, they would have discussed it in meetings with the new Christians. This was not the case. On the other hand, a stochastic process has latency up to several decades (Fazio and Mandaglio, 2012; Fazio et al., 2019). Therefore, the above process would guarantee opportune latency time values, while UV Radiation cannot.

Reading the articles centered on the use of the radiation, it is evident as some scholars have dealt these problems very superficially. In fact, often appear articles on the web that, objectively, create confusion and turmoil in the minds of scholars. However, on this topic, the curiosity is great. So, we have decided to investigate again the radiative models using as tools the Theology together with a philosophical razor, known as “Ockham’s razor”, and Religion.

1. THEOLOGICAL OBSERVATIONS

When events such as those described in the Introduction are under discussion, Theology must necessarily have a front row set. This is necessary because in our case there are two supernatural phenomena already present at the start of the considered hypotheses (emission of protons or of UV radiation, by a corpse). After, everything that follows takes place in compliance with the laws of the physics and represents the attempt to obtain a Shroud-like coloring on a piece of linen. However, it is opportune to underline that we are

talking of a piece of linen, while in the reality there is a linen sheet (4.41 m length x 1.13 m wide, about 5 m²) where to form a complex image full of features.

We observe that in the initial part of these experiments there is a Miracle; they continue respecting the natural science to demonstrate that the expected extraordinary event (the corpse that emits protons or UV radiation) is a Miracle. It is obvious the reference to the Resurrection of Jesus Christ. For us, they believe that during this transcendental event there has been a transfer of energy in the far ultraviolet of the electromagnetic spectrum that has yielded the latent image.

The Miracle is often considered like something strange, or mysterious, or magical. Saint Thomas Aquinas defines the exact nature of this supernatural event. "It is a sensible effect produced by God, which transcends all the forces of nature." In front of such an extraordinary intervention, we remain amazed and unable to understand what has happened. The above event is an effect and only God is the cause. His potency on the nature is absolute. From eternity and for eternity, God has foreseen and willed what He should do in the course of time. He has accordingly instituted the course of things, but at the same time He has preordained in His eternal decree what He should do aside from the regular course of nature (Saint Thomas Aquinas, reprinted in 1952).

We believe God is Eternal and His Omnipotence consists in being able to see all the points of the Universe (also considering that its dimension are increasing) at all times at the same time. Therefore the Divine Intervention (Miracle) can only be instantaneous (Fazio, 2020). God is "The Without Time."

In Lourdes, where many probable supernatural events are analyzed by an International Commission of Scientists, it is possible to find confirmations and to increase our knowledge about this extraordinary event which we call "Miracle" (Anastasi and De Franciscis and, 2021). The above Commission of Scientists (Bureau des Constatations Médicales de Lourdes) is made up of Religious, Agnostic, Atheists and Anticlerical. For these experts, one among the several features for being Miracle is the instantaneousness of healing. For us, who are scholars, the existence of this extraordinary characteristic means that we are facing a Miracle. In fact, the biological modifications that lead to healing occur at infinite speed (Bolzetta, 2018; Guénois and Moriau, 2019). In a time equal to zero, the tissues and the diseased organs return to being functional as they were before.

For physics the maximum speed ($c = 299.792$ km/s) is the one that the photons, particles of light without mass, have. What possesses mass will never be able to reach the speed c value. When this does not occur (in the sense that we observe galaxies moving with velocity v greater than c), it is due to the space-time fabric that expands at speeds faster than light. However, out of about 8.000 requests (all accompanied by analyses and medical opinions, both before and after the healing) only 70 healings are considered Miracles.

Therefore, the Miracles are not prodigies or marvels as they are not extraordinary events, but something incomprehensible to man that remains astounded and unable to understand what has happened. This is a result that physics, chemistry and other sciences will understand neither now nor ever. Differently, prodigies and marvels are in the possibility of the Angels who act respecting the laws of the natural sciences. However, they cannot perform Miracles because these events always exceed natural causes (Saint Thomas Aquinas, reprinted in 1952).

Moreover, we have observed that in the experiments of our concern (those with protons and those with UV radiation, both emitted by a corpse), the attempt to yield a coloration, as it is on the Shroud, is described step by step. This is possible for a natural

process. Impossible for a supernatural event that occurs in a time equal to zero (Fazio, 2020). Therefore, the use of the radiation (of any kind and energy) is not a suitable tool to explain the formation mechanism of the Shroud body image.

2. PHILOSOPHICAL RAZOR

Now, we investigate the problems of our interest introducing a philosophical razor. It is known as “Ockham razor” and affirms: “when various hypotheses have to be considered for an explanation, the most probable is the one that requires the last number of special assumptions.” The “Ockham’s razor” is not a physical law also if many scientists, starting with Isaac Newton and Gottfried Wilhelm Leibniz, took it into consideration.

William of Ockham was an English (coming from the country of Surrey) Franciscan religious, philosopher and theologian, often in contrast with the Pope. His thesis on the poverty of Christ and the Apostles was considered heretical by the Church. So, Pope Giovanni XXII excommunicated him and he went with the emperor Ludovico. For the above theologian, faith and reason must be separated. In fact, the faith is related to the Transcendent while the reason is of the Immanent (Bayley, 1949; Clark, 1971; McGrade, 1974; Tierney, 1997).

In our case, the one of the Shroud body image formation, we have already rejected the false hypothesis because the multidisciplinary activities of the STURP (Shroud of Turin Research Project) have demonstrated that it is not adequate to support this hypothesis (Jumper et al., 1984). Thus, to understand if the above Image is a natural event or the result of a Miracle, we submit the two hypothesis to the above philosophical razor.

The comparison between the supernatural event and a natural hypothesis favors this last one. In fact, to explain a Miracle it is necessarily to invoke the presence of the Omnipotent. So, such an important assumption furnishes a great probability that the formation mechanism is natural. In fact, for the mechanism natural, the special assumptions have a minor weight. Only when there is the certainty that a rational explanation is absent, we can speak of Miracle. However, we can affirm that in the scientific world the “Ockham’s razor” is held in high regard by a lot of scientists.

As already Aristotle (“Nature operates in the shortest way possible”), also Claudius Ptolemy, authoritative astronomer and mathematician who lived in the 2^o Century AD in Alexandria (Egypt), affirms: “We consider it a good principle to explain phenomena with the simplest possible hypothesis.” As one can see, this idea has traveled the world for many Centuries making a notable contribution to knowledge.

In the case of the Shroud body image formation there are some scholars that believe possible an explanation in the Immanent world. In fact, in scientific literature there are articles that describe a chemical amino-carbonyl reaction: a Maillard Reaction between amine coming by the corpse and sugars present on the linen threads due to the manufacturing procedure (Rogers and Arnoldi, 2003) or a stochastic process triggered by a little quantity of thermal energy. The only energy available in a tomb of the 1^o century (Fazio and Mandaglio, 2011 and 2012; Fazio et al., 2019). The logic tells us that, in the above sepulcher, no other sources of energy could exist. The only one, limited in time, is the one of the corpse wrapped in the burial linen. In fact, this weak energy is emitted up to the thermal equilibrium between the slightly warmer body and the sheet. Therefore, this process occurs with a transfer of a little quantity of thermal energy. This is precisely the right one that may be capable of triggering a stochastic process that after years or decades produces an image. With this state of affairs, the philosophical razor prefers the natural process.

3. RELIGIOUS EVIDENCE

Furthermore, there are other considerations, of religious nature, that must be taking into account before expressing opinion as close as possible to reality. The above considerations can be extracted from the Sacred Scriptures.

The four Evangelists in their Gospels have not written about an image visible on the burial linen of Jesus Christ. Differently, if the image was present, the Apostles would have talked about it. Consequently, Matthew, Mark, Luke and John would have written about this extraordinary event. We can say that they would have done this with immense personal joy and for the usefulness of bringing the Word of Christ to the world. Instead, for what we see in the Sacred Tests (The Gospels, The Acts of the Apostles and The Letter), none of these arguments is present. It is evident that the image on the sheet still wasn't there (New American Bible, 2010).

We believe that the burial linen of the Nazarene has been under the control of the Apostles or trusted people for a long time. For us, such a time is not compatible with the latency that the UV radiation allows. On the contrary, the latency time of a stochastic process (which can be several decades old) agree with the fact that the Apostles have not seen the image on the Shroud.

So, with the help and the certainties of the Sacred Texts, related to the burial linen of Jesus Christ, we deduced that the electromagnetic radiation (in the far ultraviolet) are not able to yield a Body Image as it appears on the Shroud of Turin.

CONCLUSIONS

The ideas that the radiations are able to solve the problem of the Shroud body image formation, it can be discarded. They are suggestive and not without charm, but concretely useless because they are outside Theology and Science. In fact, it is impossible to believe in a corpse that emits proton or electromagnetic radiations in the far ultraviolet spectrum.

Among various ideas, we believe, as it is for investigated scientists in this paper, the image on the Shroud is the one of Jesus Christ (the Nazarene), but we differ in relation to the mechanism of body image formation. We are among the few convinced of a natural mechanism which could be chemical (Rogers and Arnoldi, 2003) or thermal (Fazio et al., 2019) discarding both the Miracle and the fake hypothesis (Rogers and Arnoldi, 2002; Rogers, 2004 and 2005; Fazio and Mandaglio 2011 and 2012; Fazio et al., 2015 and 2019). Recently, we wrote an article to show that Rogers' idea (Rogers, 2008) is no better but not worse than all the others that appear in literature (Fazio and Mandaglio, 2021). Nowadays none of us, even if convinced in good faith, can affirm that his model is decisive. Although, sometimes, we do.

Therefore, because on the Shroud there is the image, yielded naturally, of the Nazarene (Fazio, 2021a), we should investigate alleged transcendental event and new convincing hypothesis of false. For these last ones, it is necessary to remember the work done by the STURP team and, above all, the knowledge produced on the nullity of the false hypotheses (Jumper et al., 1984). For us, it is sufficient their work for the rejection.

Therefore: the Shroud Body Image Formation is natural or transcendental? We known that in the above image there are encoded information on the body-sheet distance. With this result, we could already discard the supernatural event because the Miracle grants to the Natural Science only the possibility to know if such an event there has been. Nothing else.

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BIBLIOGRAPHY:

- [1] Anastasi, Filippo and Alessandro De Franciscis. I Misteri di Lourdes. Dentro il Miracolo. Effata Editrice, Cantalupa, Torino, 2021. In Italian language
- [2] Antonacci, Mark. The Resurrection of the Shroud. M. Evans & Co., Inc, New York 2000.
- [3] Antonacci, Mark. 2010. "Can contamination be detected on the Turin Shroud to explain its 1988 dating?", in International Workshop on the Scientific Approach to the Archeiropoietos Images, Frascati, Italy, pp. 239-247.
- [4] Antonacci, Mark. 2012. "Particle radiation from the body could explain the Shroud's images and its carbon dating", in Scientific Research and Essay, 7(29): 2613-2626.
- [5] Bayley, Charles Calvert (1949) Pivotal Concepts in the Political Philosophy of William of Ockham. *Journal of the History of Ideas* X: 199-218.
- [6] Bolzetta, Fabio. Miracoli di Lourdes: il racconto diretto di chi è stato guarito. Gruppo Editoriale San Paolo, Cinisello Balsamo, Milano, 2018. In Italian language
- [7] Carter, Giles F. 1984. "Formation of the image on the Shroud by X-ray: a new hypothesis", in ACS Advance in Chemistry. Archaeological Chemistry III 205: 425-446.
- [8] Clark, David W. 1971. "Voluntarism and Rationalism in the Ethics of Ockham", in *Franciscan Studies*, XXXI: 72-87.
- [9] Di Lazzaro, Paolo, Daniele Murra, Antonio Santoni, Giuseppe Baldacchini. Colorazione simil-sindonica di tessuti di lino tramite radiazione nel lontano ultravioletto: riassunto dei risultati ottenuti presso il centro ENEA di Frascati negli anni 2005-2010. Rapporto Tecnico ENEA RT/2011/14/ENEA, 2011. In Italian language
- [10] Di Lazzaro, Paolo, Daniele Murra, Antonio Santoni, Enrico Nichelatti and Giuseppe Baldacchini. 2012. "Superficial and Shroud-like coloration of the linen by short laser pulses in the vacuum ultraviolet", in *Applied Optics* 51: 8567-8578.
- [11] Fanti, Giulio. 2010. "Can Corona Discharge explain the body image of the Turin Shroud", in *Journal of Imaging Science and Technology*, 54: 20508-1-11.
- [12] Fanti, Giulio. 2011. "Hypothesis regarding the formation of the body image on the Turin Shroud. A critical compendium", in *Journal of imaging Science and Technology*, 55: 060507-1-14.
- [13] Fazio, Giovanni and Giuseppe Mandaglio. 2011. "Stochastic distribution of the fibrils that yielded the Shroud of Turin body image", in *Radiation Effects and Defects in Solids*, 166: 476-479.
- [14] Fazio, Giovanni and Giuseppe Mandaglio. 2012. "Can a latent image explain the characteristics of the Shroud body image?", in *Radiation Effects and Defects in Solids*, 167: 220-223.

- [15] Fazio, Giovanni, Veronica De Leo, Francesca Curciarello and Giuseppe Mandaglio. 2015. "Comparison among the Shroud body image formation by the linen fibrils distributions", in *The Journal of The Textile Institute*, 106: 896-899.
- [16] Fazio, Giovanni, Giuseppe Mandaglio and Antonio Anastasi. 2019. "Describing, step by step, the Shroud body image formation", in *Heritage*, 2(1): 34-38.
- [17] Fazio, Giovanni. 2020. "The Shroud Body Image Generation. Immanent or Transcendent Action?", in *Scientia et Fides*, 8(1): 33-42.
- [18] Fazio, Giovanni and Giuseppe Mandaglio. 2021. "Could the Turin Shroud body image formation be explained by Maillard reaction", in *Mediterranean Archaeology and Archaeometry*, 21: 177-181.
- [19] Fazio, Giovanni. 2021. "Physical or Theological Approach to investigate the Shroud Image Formation by UV Radiation?", in *International Journal of Theology, Philosophy and Science*, 9: 53-58.
- [20] Fazio, Giovanni. 2021a. "A Theological support, from Chalcedon, to the Shroud Image Natural Formation", in *International Journal of Theology, Philosophy and Science*, 8: 42-48.
- [21] Gilbert, Roger Jr. and Marion M. Gilbert. 1980. "Ultraviolet-Visible Reflectance and Fluorescence Spectra of the Shroud of Turin", in *Applied Optics*, 19: 1930-1936.
- [22] Guénois, Jean-Marie and Bernadette Moriau. *La mia vita è un Miracolo. L'ultima guarigione di Lourdes*. S. Paolo Edizioni, Cinisello Balsamo, Milano, 2019. in Italian language
- [23] Heller John H. and Alan D. Adler. 1981. "A chemical investigation of the Shroud of Turin", in *Canadian Society of Forensic Sciences Journal*, 14: 81-103.
- [24] Jumper, J. Eric, Alan D. Adler, John P. Jackson, Samuel F. Pellicori, John H. Heller and James R. Druzik. 1984. "A Comprehensive Examination of the Various Stains and Images on the Shroud of Turin", in *ACS Advance in Chemistry. Archaeological Chemistry III* 205: 447-476. and References therein
- [25] Lind, Arthur C., Mark Antonacci, David Elmore, Giulio Fanti and James M. Guthrie. 2010. "Production of radiocarbon by neutron radiation on linen", in *International Workshop on the Scientific Approach to the Archeiropoietos Images*, Frascati, Italy, pp. 255-262.
- [26] McGrade, Arthur S. *The Political Thought of William of Ockham: Personal and Institutional Principles*. Cambridge University Press, Cambridge, 1974.
- [27] Mottern, Robert W., Ronald J. London and Roger A. Morris. 1980. "Radiographic Examination of the Shroud of Turin. A preliminary Report", in *Materials Evaluation*, 38: 39-44.
- [28] Pellicori, F. Samuel and Mark S. Evans. 1981. "The Shroud of Turin through the microscope", in *Archaeology*, 34: 34-43.
- [29] Rinaudo, Jean Baptiste. 1995. "Nouvel Mécanisme de Formation de l'Image sur le Linceul de Turin, Ayant Pu Entraîner une Fausse Radiodation Médiévale", in *Actes du Symposium Scientifique International, Roma 1993*. F.-X. DE Guibert Editor, Paris, pp. 293-299.
- [30] Rinaudo, Jean Baptiste. 1994. "Proton Model", in *British Society for the Turin Shroud Newsletter*, 38: 13-16.
- [31] Roger, N. Raymond and Anna Arnoldi. 2002. "Scientific Method Applied to the Shroud of Turin. A Review", in <http://www.shroud.com/pdfs/rogers2.pdf> pp. 1-38.

- [32] Rogers, N. Raymond and Anna Arnoldi. 2003. "The Shroud of Turin: An Amino-Carbonyl Reaction (Maillard Reaction) may explain the Image Formation", in Melanoidins (Office for Official Publications of the European Communities), 4: 106-113.
- [33] Rogers, N. Raymond. 2004. "Frequently Asked Questions (FAQs)", in <http://www.shroud.com/pdfs/rogers5faqs.pdf> pp. 1-19.
- [34] Rogers, N. Raymond. 2005. "The Shroud of Turin: Radiation effects, aging and image formation", in <https://www.shroud.com/pdfs/rogers8.pgf> pp. 1-10.
- [35] Rogers, N. Raymond. A chemical perspective on the Shroud of Turin. J Rogers and BM Schwartz Editor, Florissant, Colorado, 2008.
- [36] Saint Thomas Aquinas. On the Power of God. Translated, using a reprint of 1932, by English Dominican Fathers. The Newman Press, Editor Joseph Kenny, Westminster, Maryland, 1952.
- [37] Schwalbe, Larry A. and Raymond N. Rogers. 1982. "Physics and Chemistry of the Shroud of Turin. A summary of the 1978 investigation", in *Analytica Chimica Acta*, 135: 3-39.
- [38] Tierney, Brian. L'idea dei diritti naturali. Diritti naturali, legge naturale e diritto canonico 1150-1625. Il Mulino, Bologna, 2002. In Italian language
- [39] United States Conference of Catholic Bishop. The New American Bible, Revised Edition. Confraternity of Christian Doctrine Inc., Washington DC, 2010.