Superstrings, Black Holes & Image Formation on the Turin Shroud

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One of the barriers to accepting that the Shroud of Turin really exhibits evidence for the Resurrection, is the lack of a known mechanism for image creation. However, this inability to accurately replicate the image, is also a strong indicator for its authenticity. But I sometimes wonder if humanity is ready for the responsibility that comes with such far reaching knowledge, considering the power of the energy required to make the image.

Can the Light that formed the image ever be identified?

Astrophysicists have made huge strides in recent decades, developing instruments to reveal the hidden depths of the universe - piercing through interstellar gas clouds to reveal star formation regions, accretion discs and proto-planetary systems - to probe beyond the visible spectrum. Images of the Event Horizon of a Black Hole at the core of Galaxy Messier 87 are of particular interest in relation to Shroud science[1]. (*Fig. 1.)*

Fig. 1: First image of a Black Hole at the core of Galaxy Messier 87, resolved by radio waves by the Event Horizon Telescope, 2019.
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These highly sensitive instruments are not only helpful for studying cosmic radiation, but have also necessitated a whole new way of looking at reality. Things that are too small even for particle accelerators to study, can be better understood via scaled-up versions found in the far reaches of the cosmos. And the hidden structures discovered by using wave-lengths beyond the visible spectrum, pose deep philosophical questions that have taken physics beyond the study of - galaxies, dark matter, dark energy, gravitons and the Big Bang - to questions about the primordial ordering mechanism that brings together all the elements of the Universe. Superstring Theory is a game-changer for understanding how the Universe operates, because although the equations still don't quite add up to a Unified Theory of Everything, Superstring Theory has made great strides in forming a bridge between the very large and the very small. Coupled with Quantum Entanglement, it suggests a possible mechanism for the Resurrection and the image imprinted on the Holy Shroud. I will avoid lengthy technical explanations, but aim instead to distil certain complex theories to create stepping-stones to understand the different types of EM Radiation that exists at the threshold between matter and energy. ***Because when there is a change in the 'substance' of matter, there is often a related 'light event'.***

The importance of Polarity in Electromagnetism

Astrophysics has revealed a *Quadrupole Radiation* (also spelled Quadrapole) which *although intense locally, drops away quickly at a distance*. In the case of Black Holes, the rim of the Event Horizon glows brightly as all matter and even massless particles such a photons, are consumed by the voracious gravitational forces from which even light cannot escape. Visualising this process at the largest scale helped scientists to understand how Quadrupole Radiation may act at smaller scales. Although the gravitational forces are tiny in comparison to a black hole, the smaller spherical or toroidal (doughnut shaped) forms could look similar to ball lightening. This Quadrupole Radiation differs markedly from the more familiar Dipole Radiation emitted by visible light sources such as the sun.

Dipole Radiation exhibits radiant energy that keeps on travelling outwards in a predictable fashion. An example is the light from stars, which can ebb and flow with changing energetic forces such as sunspots and solar flare activity, but largely *follows a predictable course at a constant speed*. This radiant energy in the form of heat and light, can be interrupted by clouds of interstellar dust and gas, or deflected around objects by their magnetic fields, or bent by gravitational lensing. Measuring these fluctuations infers a great deal about the space occupied between the light source and the viewer - with 'redshifting or blueshifting' indicating the direction of travel of more distant objects. And spectral lines can also define the chemical make-up of different elements, which is useful in determining the make-up of asteroids, or the gases in the atmospheres of distant planets and moons. Astrophysicists feel increasingly like time-travellers because the further into the cosmos they look, the further back in time they see.

However, there are other forms of light which behave differently from radiant light. A simple example is the 'laser beam' which follows a straight course rather than fanning out radially. (*Fig. 2a & 2b.)* If bounced off a mirror, it will continue on a new course dictated by the angle of the mirror, but it remains a narrow beam until it meets a non-reflective surface.

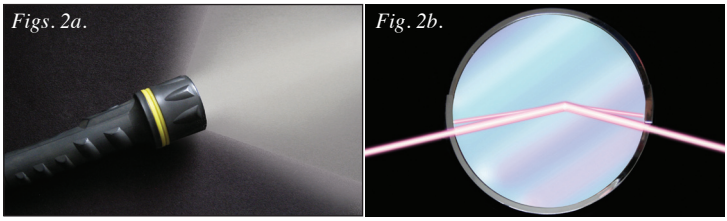

Fig. 2a. Radiant light from a torch versus, Fig. 2b. the parallel beam of a laser, shown reflected by a mirror.

There are also 'coherent light beams' that can stop in mid-air *before* being reflected off a solid object or even appear to *change course*. However, this could sometimes be a misinterpretation - because theoretically there could be an obstacle in the path of the light beam which impeded or reflected it's course, but which was beyond the visual capability of the viewer or viewing instrument.

However, the kind of light that seems most relevant to the Shroud is even more exotic, in that it emits an intense burst of radiant energy but ***which falls away in intensity almost immediately.*** The easiest way to visualise this would be as an intensely bright sphere of light, but which casts no light around it.

Fig. 3a: A Full Moon's illumination lights up the land and casts directional shadows

Fig. 3b: Quadrupole Radiation would conversely, create an intense but highly localised light source which leaves little trace on the landscape.

Unlike a full moon on a clear night, which illuminates the ground and casts shadows from trees, or creates glistening pathways on water - such a sphere would leave little discernible trace of illumination on the landscape around it, despite it being so bright that it would be uncomfortable to look at for any length of time. (*Fig. 3a & 3b.)* Whilst 'Lasers' & 'Coherent Light' are created artificially, this special form of light can appear naturally and behaves more like a plasma.

To understand the different forms of electromagnetic energy and how they emit light, it's helpful to differentiate certain factors:

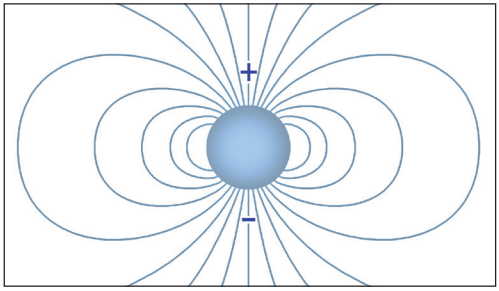

Fig. 4: Dipole Radiation. *© P Foster 2023*

Dipole Radiation: has two equal but opposite electric charges or magnetic poles separated by a small distance. It can also refer to a molecule in which the centre of positive charge does not coincide with the centre of negative charge. It is the source of Radio Waves, TV Signals and Visible Light. (*Fig. 4.)*

Multipole Radiation: is usually a combination of several dipole elements acting together.

Quadrupole Radiation: is considered to be an idealised form which theoretically exists as a symmetrical unit with four poles instead of two. It can be created artificially for use

in imaging technology, but when it occurs spontaneously in nature, it appears to have properties that differ significantly from Dipole Radiation. (*Fig. 5.)*

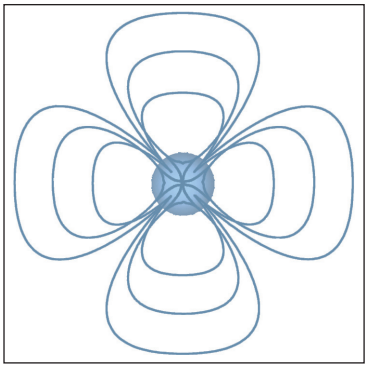

Fig. 5. Quadrupole Radiation simulation. © Philippa Foster 2023

This simulation shows how the lines of force are more contained, and start to emulate recognisable forms seen in nature, indicating that it could play a role in organising matter. That is interesting considering that Jesus not only loosed the bonds of matter to turn into 'light', but was also able to return to physical form later. *(Note the centre is cruciform).*

This form of radiation is relevant to the photographic image on the Shroud because unlike 'conventional' light, the light from Quadrupole Radiation does *not* radiate outwards in a continuous ray until interrupted by an obstruction. Instead, although very intense, its light energy drops away quickly from the body that emits it and is therefore very hard to detect. And its use in scientific instruments is considered limited by this effect because it is so localised. Because Quadrupole Radiation radiates very little energy, it isn't used much in electronics and consequently doesn't get much attention, but in relation to the image on the Shroud, it may be just what we're looking for.

The radiation which was theoretically emitted by Jesus' lifeless body during the Resurrection, left only the faintest of images on the delicate cloth. There is no burning or damage to the fibres, just a faint change to the colour of the surface fibrils, sufficient to create a coherent image when viewed in its entirety. Yet tests performed by Italy's National Agency for Technology and Energy revealed that colossal amounts of energy were required to replicate this effect when 'colouring' just a small sample of similar cloth. They reported that the Shroud of Turin may have been created by a "flash of light", and that it "has many physical and chemical characteristics" which are "impossible to obtain in a laboratory". In experiments to recreate some of the properties of the Shroud on a tiny piece of cloth, they used short but incredibly powerful bursts of ultraviolet light. However, Dr Paolo Di Lazzaro wrote that the ultraviolet light necessary to create the *full* image "exceeds the maximum power released by all ultraviolet light sources available today". It would require "pulses having durations shorter than one forty-billionth of a second, and intensities on the order of several billion watts".[2]

How could such power be harnessed?

If we have been searching for a form of natural radiation capable of dropping-off in intensity exceptionally quickly, a natural source of Quadrupole Radiation, may be the direction to look. And this is not the only attribute that helps it to fit the necessary criteria. That is because any image creation process has to take into account the practical considerations of 1st Century funeral practices in order for this theory to have any

credence. Jesus was deceased and had no particle accelerators with him in the sealed tomb, so if the image wasn't artificially created, it tells us a great deal about the *unlimited reserves of naturally occurring energy that Jesus had at His command*.

Although deep space has been the best laboratory for this kind of science, Quadrupole Radiation has been witnessed occurring naturally in other fields of study. This is a huge area in itself so I won't digress at this time, but the fascinating finding of this research is that people exposed to this kind of Quadrupole Radiation notice subtle effects on the way their brain perceives light. Some describe this effect, not as an expanding of the brain's capacity to 'see' wider areas of the visual spectrum, but as a 'fine tuning'. It's as if the brain is already wired to be capable of perceiving subtler spectrums of light, but needs a catalyst for these abilities to be activated. So once a person has been exposed to a burst of Quadrupole Radiation, their brain becomes more sensitised to detect similar 'light events' which would have previously been beyond their range of perception. It's interesting to consider that the disciples who were present at the Transfiguration, may have been exposed to such a burst of light and subsequently may have become more sensitive to the workings of Jesus' ministry.

To explain how Jesus could be deceased and yet still capable of disappearing, whilst simultaneously leaving a permanent image on the Shroud, we need to explore Quantum Entanglement and Spooky Action at a Distance.

This is because the problems that Shroud researchers need to solve, include:

a) the fact that the Divine light associated with religious encounters doesn't easily fit the current models of light and energy.

b) And there also has to be a feasible delivery method.

c) One would have to bridge the gap between <u>known</u> radiant light sources and the <u>unknown</u> type of 'light event' which coloured the topmost fibrils of the Shroud. But so far, the closest science has come to replicating a method for colouring the fibres, requires colossal amounts of energy input - powered and directed by cutting-edge technology. Clearly this method could not have been employed two thousand years ago, or even in this current era.

d) And even if the image could be replicated with a specific type of light, how could any human accomplish such a feat two thousand years ago, after death, within an empty tomb? Yet this is required in order to fulfil the criteria of the 'Resurrection'.

However, it seems that if we find the correct 'type' of light that coloured the fibres, we may also find answers to the other questions as well.

So the search is on for a form of radiation that could create an intense burst of light but which drops off sharply enough to affect only the topmost fibrils. Richard Stanley's research endeavouring to measure the depth to which the Shroud 'image' penetrates the grooves between the threads of the herringbone weave, is testament to just how fleetingly superficial the image is, i.e. just a few microns.

If we follow the direction of travel that Quadrupole Radiation indicates, i.e. that it is possible for a flash of light of unimaginable intensity to mark the cloth and yet only affect a minute depth of the thread, we still need a delivery mechanism. Clearly Jesus had no particle accelerator from which to draw such energy, so we have to work on the assumption that his own body was the instrument he used to effect these changes to his physical matter. He had also been pronounced dead physically, which further diminishes the possibility, EXCEPT that Quantum Fields and Superstrings open up a whole realm of new possibilities. Topics which were once the realm of faith are now being anchored into scientific reality.

Quantum Fields and Superstrings

Superstring theory has broadened the scope of understanding beyond Three Physical Dimensions and the Fourth dimension of Time - to Multiple Dimensions, Quantum Entanglement and Spooky Action at a Distance. This allows objects to exert an influence non-locally and in some instances, to appear to exist in two places at the same time. General Relativity and Quantum Theory both work well individually - with Relativity explaining large, distant objects, and Quantum Theory describing the smallest subatomic particles and quantum packets - but there is still a gap in understanding how to bring these two fields together. Superstring Theory is edging us closer, by indicating an interconnectedness across vast distances between objects both large and small, which appear to be bound by invisible forces such as gravity, dark matter and dark energy, however, my personal feeling is that it will require an additional field of study to fully bridge this gap. I believe we need to incorporate the additional ingredient of Consciousness Studies, which may ultimately replace Dark Matter and Dark Energy as a framework upon which everything hangs.

The Role of Consciousness

If we continue to perceive matter to be completely 'inanimate', the forces at work in the wider cosmos may never be reconciled. But if instead, we propose that the universe was brought into being by *Consciousness*, it could resolve the Big Bang, Spooky Action at a Distance, Quantum Entanglement and so much more. Everything that exists would be permeated by this organising force, and therefore in resonance with every other part of the whole. When exobiologists search for 'life' on Jovian Moons or distant Exoplanets, it is with a view to encountering basic life-forms, but in this context I am speaking of a universe that is itself 'animated' through-and-through. Not just as a frog perched on a rock, but as a sea of infinite possibilities just waiting for certain parameters to occur to allow evolution to create more complex life. It has already been proven that the basic building blocks of life, such as hydrocarbons, exist widely throughout the galaxy, but it is the mechanism which organises these elements into a coherent form that is the Holy Grail for astrobiologists. But mathematics and chemistry fail to solve the puzzle adequately, and if the Shroud depicts God Incarnate, we may well find signatures of this organising force within the image on the cloth that he left behind at the Resurrection.

In lab conditions, particles can be stimulated to react in certain ways, but this is an

artificial and short-lived form of animation. However, within Hubble Telescope images of the 'Pillars of Creation' in the Eagle Nebula *(Figs. 6a & 6b)* and 'Mystic Mountain' in the Carina Nebula *(Fig. 7)*, where stars are born in Stellar Nurseries, one can begin to sense how this potential is already locked up in dust and gas, and simply requires an ordering mechanism to make conditions 'just right' for more complex systems to form.

Different wavelengths of light reveal certain features which when combined, can tease out hidden structures. The 'Pillars of Creation' were re-imaged in infrared some years after the original iconic images were taken. This allowed Hubble to peer through dust and gas - which is transparent to infrared instruments - enabling it to see new-born stars within the towering columns. The newer JWST is even more sensitive[3].

Fig. 6a.

Fig. 6b.

Fig. 6a. Original Hubble image with stars obscured by dust & gas.
Fig. 6b. Larger image - The 'Pillars of Creation' in the Eagle Nebula re-imaged by Hubble in Near Infrared Light.
© NASA/ESA/Hubble Heritage Team (STScI) AURA).

Fig. 7.

Fig. 7.
'Mystic Mountain' - Carina Nebula.
© NASA/ESA, M. Livio & the Hubble 20th Anniversary Team (STScI).

But at what stage does anything 'become alive' - like Frankenstein's monster? We are surrounded by life on Planet Earth, yet when we back-track through evolution to the primordial ooze - and further still to the accretion disc around the sun that formed the proto-planets of the Solar System - one has to conclude that the potential for life existed in the universal building blocks right from the outset at the Big Bang, or it never could have come into being.

This is the crux of the matter, because it indicates a 'mind' behind the Universe. Not just 'someone' tinkering like Slartibartfast in Hitchhiker's Guide to the Galaxy - creating landscapes to be populated with creatures for someone's amusement - but a Universe which is not only *controlled* by 'thought' i.e. the 'mind of God', but is actually *made* of 'consciousness'. This could explain how primordial matter emanated from a singularity, billions of years ago, and resulted in the Universe we experience today.

Logically, if the Universe derives from 'consciousness' or 'thought', there has to be a 'Thinker'. This concept understandably worries scientists, because it makes for unpredictable equations and complex political hurdles, but it brings together all of the theories to explain how order can arise out of chaos. And it's worth remembering that

if a creative force of pure 'thought' brought the Universe into existence, it must have existed billions of years before humans ever created religions. It would mean that everything is united by a common thread, just expressed slightly differently according to cultural factors. If the same energy pervades everything, it would mean that it is not 'exclusive' but truly universal. The 'G' word, as University Professors prefer to call it, need no longer be seen as a problem, instead it becomes the *answer* to the problem.

Science has understandably tried to keep the 'G' word - 'God' out of the equations until now, but astrophysicists are increasingly aware that there is too much connectivity and vitality in the universe for it to be accounted for by mere chance alone. Even if one imagines that a complex and accidental stream of events led chemical elements to evolve into ever more complex forms, amino acids and eventually life itself - all that 'stuff' that came out of the Big Bang still had to originate from somewhere. If it all came into being via thought, it wouldn't be any more complex than any other theory, but it just requires an adjustment to our concepts of what constitutes 'reality'.

Everything that we experience is, at the most fundamental level, just a stream of electrical and chemical stimuli which our minds form into a 'solid' and 'dependable' world around us. And, when one analyses matter at the smallest levels, it's just a system of vibrating 'strings' in resonance, with our conscious awareness anchoring it into a chronological life experience. The Holographic Universe theory has had a lot of attention recently, and is akin to living in an artificial reality simulator like the Matrix, however I prefer the idea of it being an ever-evolving system of infinite possibilities embedded in a sea of consciousness. In my preferred view of this theory, there is indeed a benevolent 'Thinker' at the helm, whose Son dipped his toe into our reality for a while to try and help us, then exited when his work was done. He also, thankfully, has left the lines of communication open ever since, interestingly, *via thought or prayer*.

The Power and Responsibility of a Thought Driven Universe

Once we remember that our 'solid' reality is in fact, just energy in motion, it's easier to understand how everything fits into the wider Quantum Field. And the driving force behind that energy may be consciousness. But that doesn't have to be limited to God's consciousness. The field of genetics is now way beyond just the study of codes for living life forms. It is now known that thoughts can affect the coding of DNA, and conversely, changes to the coding can affect behaviour. It's unsettling to consider that *human* thoughts can have an impact on the way systems develop, but also liberating to think that God may have imbued his creations with greater power over our own destinies than we realise. Do we co-create this reality by our own thoughts? The phrase 'be careful what you wish for' takes on a whole new meaning if 'thought' can act on objects at a distance, whether intentionally or not. Mystics have long understood this, which is why so much time is devoted to mental disciplines in the spiritual traditions of the world, because if one really could affect the world by one's thoughts, it would be a daunting responsibility. Could that be part of the hidden message within the Shroud - that once you understand how it was created, you become more aware of the collective responsibility for the thoughts of humanity?

Put another way - if we could unleash the power of a black hole, how would we use it?

The late Dr Edgar Mitchell - Apollo 14 Astronaut and sixth man to walk on the Moon - was a pioneer in the field of Consciousness studies and his reputation as an Apollo Astronaut helped give credibility to this emerging area of research.[4] In this context we are not talking about Artificial Intelligence, but instead the *Intrinsic Consciousness* within all living beings, which is now being scientifically shown to exert an influence at a distance. The phenomena of the 'experimenter effect' is well known, but Dr Mitchell's research showed a far more profound interconnectedness between living life forms and their environment. Scientists within his Institute for Noetic Sciences, used rigorous scientific method to make discoveries in the field of human consciousness, including that the mind operates on quantum principles and can therefore exist in more than one place at a time. Some of the research papers referenced the 'soul', and its ability to exist independently beyond the physical body. This is important when considering how Jesus could remain conscious after the death of His physical body.

If he really was Divine, and was connected to the creative source of the Universal Quantum Field, Jesus could be both physically deceased and consciously aware, and be able to draw down zero-point energy to expose the Shroud to an intense but highly localised burst of Quadrupole Radiation, leaving a permanent message for humanity.

Jesus remains the Eternal Saviour. In his wisdom, he knew that despite the doubters, every future generation would have seekers yearning for truth and justice. So for his precious sheep, he left a permanent reminder, a message of hope that still endures two thousand years later. In this age of particle accelerators, we still struggle to understand the light which froze his visage in time. Yet no science is needed, to have a direct encounter with His compassion, when one stands in silent contemplation in front of the image on the Shroud. No matter one's level of scientific knowledge, the Shroud remains a powerful sign for every age - past, present and future. And the fact that to begin to find a mechanism for image formation, it has required scientific techniques designed to look back to the very beginnings of the Universe, shows the profound nature of the Eternal and beautiful mind that visited humans two millennia ago.

References:

[1] Black Hole research: The Harvard & Smithsonian Centre for Astrophysics; www.cfa.harvard.edu; The Journal of Cosmology; The Open University; NASA.

[2] Paolo Di Lazarro's quote: The Turin Shroud Exhibition; www.shroudofturinexhibition.com.

[3] JWST - James Webb Space Telescope has a suite of instruments including NIRCam and MIRI and has a far larger image gathering capability than Hubble.

[4] Dr Edgar Mitchell's Institute of Noetic Sciences: www.noetic.org.