

The Promise (and Threat) of the Shroud of Turin

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Abstract: *Explanations for the image on the Shroud of Turin bring religion into science in controversial ways, with researchers divided on whether these are incommensurable domains. This paper shows how they are commensurable, and introduces the relevance from natural and social sciences of theories that postulate unobservable objects and processes.*

Keywords: Unobservable, resurrection, evidence, dematerialization

1. INTRODUCTION

In a paper published shortly before his death, Richard Rorty (with Gianni Vattimo) remarked that “empirical evidence is irrelevant to talk about God,” and then observed that this viewpoint, advanced by both David Hume and Immanuel Kant, applies equally to theism and atheism [1]. Rorty speaks here for many people, if we interpret his remark as applying to all of religion, not simply God. Religious claims are widely said to be “matters of faith,” and are implicitly considered to be devoid of evidence.

This tension between science and religion is also apparent in discussions of the Shroud of Turin (ST), where its evidential relevance to the Resurrection of Jesus is questioned, because the Resurrection is a religious dogma.

Western philosophy has had a vital interest in religion since its origin in pre-Socratic times (ca. 600 BCE), when it helped a critical form of thought to develop within Greek culture that came to be known as science. The rationality of religion has been a topic in Western civilization ever since, and philosophy has been plausibly understood as a discipline committed to the defense of naturalism, apart from an era in which Christianity dominated the academy (ca. 400 – 1700 CE) and philosophy itself acquiesced [2]. I will approach ST here as a philosopher of science and religion. Whereas many topics could be considered under this broad rubric, I will narrowly focus upon the recent conjecture that the image of the Man of the Shroud was produced when he became “mechanically transparent,” or “dematerialized,” or “disappeared in a shower of subatomic particles.” The science and technology of the present time is not advanced enough to show us how to make another ST, but it is great enough to pose an intelligible question about a body’s disappearance that was not possible in an earlier time, prior to the atomistic era.

2. SCIENCE, RELIGION, AND SHROUD OF TURIN LITERATURE

Ray Rogers illustrates the chagrin sometimes felt by scientists who must deal with both laboratory work as well as the conjectures of those having religious beliefs. In reviewing Mark Antonacci’s book, *The Resurrection of the Shroud*, Rogers describes it as an attempt to “prove the resurrection through science,” which he clearly considers futile [3]. In explicating the nature of scientific method several pages later, Rogers remarks that this method requires testing all hypotheses equally, and that “Hypotheses that involve miracles can not be rejected categorically, but they are impossible to test experimentally.” A little later he remarks that claims about miracles cannot be proven or disproven, which parallels the view expressed by Rorty mentioned above. Further, Roger remarks that “all ethical scientists apply Occam’s razor,” i.e., the principle of “eliminating fictitious and unnecessary elements from explanations,” and clearly considers Antonacci not to have employed Occam’s principle. I will comment on Rogers later in this paper.

Another recent study that shows the tension between science and religion is a paper presented at the 3rd Dallas conference on ST in 2005, whose twenty-four authors attempt to offer a comprehensive account of accumulated evidence and classify these according to their evidential weight [4]. Unquestionable observations form 1st class items; confirmed observations form the 2nd; “facts that were evidenced by some researchers,” but not by all, form the 3rd class; and the 4th class derive from biblical texts, provided that these are historic documents. Because the ST might be the burial cloth of Jesus Christ, the biblical documents are said to be appropriate to include, but “not on a theological level.” What this clause is meant to include or to exclude is not clear, for the possibility that the Resurrection of Jesus is implicated in the ST image is

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not excluded later in the article. When this paper considers John Jackson's conjecture that the Man depicted on the ST "became mechanically transparent," [5] this conjecture is rejected as "not scientifically testable because it bases itself on a non-scientific fact" [4]. The assumption here is that scientific facts and non-scientific facts both exist, but how they differ is not explained. Neither is the inability of "non-scientific facts" to contribute to scientific testing explained. Again, the assumptions about science and religion could be questioned, along with views about the nature of evidence.

Perhaps the most curious item mentioned in the data derived from the New Testament (NT) (category 4) is the appearance of Christ to more than five hundred, which St Paul records. Accounts about appearances of Jesus after his death have generally been advanced by the Church as evidence for his Resurrection, but this reference is among the least impressive of the dozen or so reports found in the NT. Nothing is said by Paul about the location or time of the appearance, or about the people who made up the five hundred; neither is any detail offered about what was actually observed, perceptually speaking. On the whole, this co-authored paper that includes many researchers in the natural sciences is ambiguous on the issue whether observational evidence is admissible for the Resurrection of Jesus, but I surmise that obtaining agreement among twenty-four authors on a topic in science and religion was difficult. Other authors on the ST are not cautious in letting theological and scientific concepts to be intermingled, such as physicist and historian of science, Thaddeus Trenn, who writes: "I should like to introduce weak *dematerialization* [which is a series of events at the level of microparticles] as perhaps a key feature of the resurrection event associated with the Shroud of Turin [6]" I will look more closely at Trenn's view below.

3. OBSERVATION

The value that Shroud scientists place upon observational evidence cannot be contested, but the nature of observation is no longer simple. According to Dudley Shapere, sophisticated kinds of equipment have expanded the concept from what it once was, so that physicists, for example, now routinely speak about observing neutrinos [7]. These subatomic particles that stream from the sun pass through the earth as though it were not an obstacle, and are "caught" in large vats of carbon tetrachloride placed in abandoned mines, triggering rare but detectable chemical changes. From the standpoint of common sense, neutrinos are not observable, but physicists tend to think otherwise, given their expanded understanding of observability. Observability enters discussion of the Shroud in another way.

The ST depicts a man who may have been dead when an image of his body was made, but death is not a matter of

straightforward observation. The cessation of breathing, blood circulation, and brain activity have all been used to mark the distinction between being dead and alive, but none of them are exact, as a recent discussion by a neurologist about brain activity demonstrates. [8] Near-death experiences (NDEs) reported in the last thirty-five years also bring the imprecision of 'death' into focus [9], for opinions vary among experts concerning the status of those reporting NDEs.

Questions about whether the Man imaged on the ST was dead or alive when the image was made have never entirely disappeared [10], and this issue will never be clarified in any totally satisfactory way. If scientific studies introduce a precise standard for death resulting in an operational definition, the commonsense understandings of death will be transgressed, and people will balk at changing their ways of speaking. In many technical fields of science precise operational definitions of terms are accepted as presented, but these definitions are about matters that are insignificant to us. With the concept of death, however, deepest human values and beliefs are implicated, and any proposed operational definition would be controversial and relentlessly contested.

4. UNOBSERVABLES IN SCIENCE AND RELIGION

Scientific development in the last two centuries would be unimaginable without theories that postulated unobservables. Dimitri Mendeleev's work on chemical elements, Gregor Mendel's conjecture concerning "inheritance factors" (genes), Charles Darwin's postulated mechanism in evolution, Ernst Rutherford's model of the atom, and Alfred Wegener's hypothesis concerning tectonic plates, all involve conjectures about the existence of unobservable objects or processes.

The experimental work that led to claims of existence concerning baryon-II particles is an instructive example of the value of this method. Subatomic particles were brought into collision in a cloud-chamber, and the photographic plate in the chamber records the sequence of events (Figure 1, read from left to right). The large dot denotes the collision, and the straight line indicates that the collision produced a charged particle. This particle quickly disintegrated, apparently producing a particle having no charge, which corresponds to the blank space (baryon-II); moreover, the V-shaped pair of tracks in the trajectory of the first straight line indicates that baryon-II also disintegrated. The V-shaped pair of tracks indicates that the two particles are repelling each other, and consequently have the same charge.

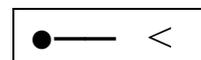


Figure 1

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Meaning to the term ‘baryon-II’ is provided in this experiment by assigning a causal role to the postulated entity in relation to events just before and just after its hypothesized occurrence in the causal sequence. We might not be able to assert in some final sense that the baryon-II particle is unobservable, for some future technology might “observe” its presence. However, we can conjecture the existence of baryon-II in this sequence without understanding fully the causes of particle disintegration and without being able to describe the baryon-II particle in definitive terms. The method of reasoning described here was identified by the 19th century American philosopher of science, Charles Saunders Peirce, as reproduction (or abduction), in order to distinguish it from deduction and induction, whose structures are quite well known. This reasoning has unlocked so many fields of scientific inquiry that no reason exists for refusing to consider it concerning religion, provided that the conjectural nature of what is suggested is kept in mind. My claim here obviously conflicts with the certainty that is often (implausibly) claimed over matters of religion, and also conflicts with the claim that unobservable entities in religion cannot be supported or undermined by (observable) evidence.

Consider the strange event described in the synoptic Gospels in which Jesus is said to have performed an exorcism in which the “evil spirits” passed from men to swine [11]. All three gospels tell the story of two men (or maybe only one) in the area of the Gadarenes who were (was) so fierce that people did not go near. They accosted Jesus strangely, addressing him as the Son of God and asking him if he had come to torment them. When he commanded “the demons” to leave the men, “the demons” asked for permission to go into the swine feeding nearby, and Jesus gave “them” leave. The men immediately lost their ferociousness, but the swine rushed down a slope into the sea, as though “something” had been “transferred” – call it a ‘spirit’, in keeping with tradition – from the men to the swine. The relevant events here do not appear to be miracles, that is, breaches of established laws of nature, unlike levitation, say, which conflicts with Newton’s law of gravitational attraction. This “transfer” supplements information about the conventional natural order, rather than conflicts with it, just as the discovery of baryon-II supplements existing knowledge of physical structures. Three existential realities are “observably” present in the event described in the New Testament: (a) “diseased” men who become normal as a result of the transfer; (b) a horrific form of (apparent) sentience that debilitates human life, is locally situated, and is forced to leave the men and allowed to enter pigs; and (c) something else – also described as Spirit – whose immense power is momentarily glimpsed and is then gone. An empiricist having no religious beliefs or practices, but having a background in modern atomism, could carry out the observation. Nothing in the reports requires construing spirit as non-material, and here I again

part from tradition. Spirits can be defined contextually, primarily by the causal roles they are postulated to play, just as baryon-II is comparably defined.

5. RESURRECTION

The report of a resurrection is most extraordinary, so extraordinary in fact that such a report is generally dismissed without scrutiny. The *Los Angeles Times* reported an allegation from Nigeria in 2001 in which a minister seemingly killed in a car accident came back to life even after embalming had begun. His wife credited the presence of God in a building after a special service conducted by a German evangelist. This allegation has made no impression upon the academy, to my knowledge, presumably because of the inherent improbability of the claim that an indisputably dead man came back to life.

Professor John Hick, who has taught at the Universities of Cornell, Princeton, and Cambridge, and currently holds chairs in religion at Claremont Graduate University and in theology at the University of Birmingham, says that two examples of resurrections can be found in Hinduism from the last one hundred years [12]: Sri Yukteswar is said to have appeared after his death to Paramahans Yogananda, in a hotel bedroom in Bombay (Mumbai), and Yogananda also reports that Sri Yukteswar saw his own guru in 1895. However, Hick is simply wrong to view these as instances of *resurrection*, for we can legitimately ask if the bodies of the two gurus came back to life, leaving some causal effects in their graves or in jars where cremated remains are kept. These (mistaken) examples from Hick and the example from the *LA Times* indicate that claims to resurrection bring in several distinct matters for which evidence is relevant: (a) that some person is indisputably dead; (b) that the corpse no longer exists after its resurrection, and (c) that “someone” (*identical* to the dead person) is indisputably alive after having been dead.

The fact that some ST researchers claim that any report of a resurrection can be dismissed as devoid of evidence is curious, for it makes a pretension to omniscience about evidence, as though they had a full understanding of the subtle relationship between (successful) evidence claims and hypotheses to which such claims are relevant. Philosophy of science is not remotely close to outlining the full scope of evidence, which became graphically obvious in extensive discussions of confirming evidence for simple lawlike generalizations beginning in approximately 1965 [13]. The most significant epistemic fact about the Christian allegation of the Resurrection is that its earliest documents mention no eyewitnesses. Only an empty tomb was found, it seems, followed by alleged appearances, which biblical criticism has undermined by the following observations, among others:

1. Tradition has distinguished appearances of Jesus from visions of Jesus, with the Ascension serving as

Proceedings of the International Workshop on the Scientific approach to the Acheiropoietos Images, ENEA Frascati, Italy, 4-6 May 2010

the event at which the appearances (physical encounters) stopped and the visions (subjective experiences) began. However, *St. Matthew* puts the Ascension in Galilee, whereas *St. Luke* puts it in Bethany (near Jerusalem) forty days after the Resurrection. Then *St. John* implies that the Ascension occurred within the first eight days of the Resurrection.

2. Paul's list of witnesses in *I Corinthians* 15 is devoid of details, so that it is virtually without value as evidence. We who have become attuned to scientific demands clearly see its evidential paucity, for our collective epistemic sensibilities have been honed by several centuries of science and other forms of critical reflection.

3. The earliest gospel is *St. Mark*, the ending of which has been a matter of dispute. A widely accepted short ending has no accounts of appearances at all. A longer ending includes accounts of two appearances, one of which asserts that Jesus "appeared in a different form," although it does not elaborate. The Church has widely repudiated the claim that the form might vary, but its grounds for doing so are suspect.

4. No gospel includes a description of Jesus, and the only physical description of him in the NT is that found in *The Revelation*, which is widely viewed as symbolic of a transcendent reality, not as a portrayal of how he appeared to his followers. Inasmuch as the identification and re-identification of individuals usually depends exclusively on how they appear, the failure of the NT authors to adduce details about the appearance of Jesus before or after his Resurrection is mysterious.

5. Harmonizing the gospels with one another, and also with *I Corinthians* 15, appears to be impossible, for Paul identifies Peter as the first to whom Jesus appeared, and several gospels assert or suggest that Jesus first appeared to Mary Magdalene.

6. The gospels (including the long ending of *St. Mark*) mention something about doubts arising in those who saw Jesus, or that he was not recognized. For example, *St. Matthew's* account of the Ascension says that his disciples worshipped him, but some doubted. The nature of this doubt is not elaborated, however. The claim that he was not always recognized, or that doubts accompanied perceptions, is more understandable if his form varied.

7. The nature of the *seeing* involved, in reports that disciples had "seen the Lord," is in dispute [14]. Some consider Paul's own Damascus-road encounter to be a paradigm of all or most cases of the appearances, making them subjective visions [15]. The more life-like appearance accounts in *St. Luke*, *St. Matthew*, and *St. John* are then seen as redactions of the stories in ways that suppress docetism or enhance the divinity of Jesus.

8. The twenty to fifty years believed to have elapsed between reported events and the written accounts would generally be considered today as a serious flaw in any effort directed to maintaining the credibility of what was reported.

9. The "ordinary" historical claims on which the NT writers can be successfully evaluated, e.g., governors or rulers who are also mentioned in widely recognized historical documents, seemingly provide very little confirmatory value to the "extraordinary" events that they allege [16].

10. Academic study of the historical understandings of the origins of Christian faith has undermined confidence that the canonical biblical texts are the best place to begin. For example, only two canonical texts, viz., *St. Matthew* and *St. Luke*, assert the Virginal Birth; other early documents, which number something like fifty, offer very little or nothing by way of evidence for the Virginal Birth. Similarly, non-canonical texts that address the post-Resurrection phenomena do not endorse traditional views in obvious ways. To examine Christian origins from canonical texts is to undertake a *theological* inquiry; to examine Christian origins from all possibly relevant documents (and sources) is to undertake a *historical* inquiry. We might wonder why we should do theology when we can do history.

Other difficulties could be mentioned. What Christianity really needs in order to advance its unique position is evidence that the body of Jesus *disappeared* in the way that is necessary for a resurrection.

6. THE PROMISE (AND THREAT) OF THE SHROUD

The conjectures and allegations concerning the ST that have emerged in the last two decades offer just such a possibility, particularly the conjectures that the body of the Man on the Shroud became mechanically transparent [5], or that the body dematerialized [6], or that imaging below his body's surface has occurred [17]. Even if these suggestions offer little promise by way of testing, they raise a possibility that was seemingly never in clear view prior to the onset of the age of atomic physics. Who ever thought that evidence might be found for the disappearance of a body in a resurrection that no one witnessed directly? These conjectures bring into sharp relief a gap in the evidence that the Church now needs for its central doctrine, and now that this lacuna is in view, the future can never be like the past. The atomic age, combined with recent speculation about the source of the ST image, together have uncovered an evidential weakness in Christianity's central dogma. Since the NT accounts of post-death appearances of Jesus are not nearly as epistemically impressive as they need to be to support a

Proceedings of the International Workshop on the Scientific approach to the Acheiropietos Images, ENEA Frascati, Italy, 4-6 May 2010

resurrection, Christian faith must come up with more impressive evidence than the body of Jesus *disappeared* than the evidence from texts that merely report that his disciples could not find his body. The ST offers some promise on this point, but it is also a threat. A new idea has emerged whose significance will eventually change the way we all look at evidence for a resurrection. Let me return to Rogers's comments on Jackson.

Although Rogers says that Jackson's conjecture to account for known features of the ST image is beyond testing, he does make remarks about this conjecture that are test implications [18]. Rogers is treating Jackson's view in just the way that Karl Popper, widely regarded as one of the foremost philosophers of science in the 20th century [19], regards scientific claims, viz., they must be subject to falsification. Jackson considers the body of Jesus to have become "a body of light," the image of which was produced on the ST by irradiation. Rogers claims [18], among other things, that this radiation should have affected the blood on the ST in detectible ways; that greater differences should be observed between the structure of fibers in image areas than in non-image areas; and that the distinctive color found in fibers from image areas should also be found in the adjacent "pores" of the cloth. Jackson (with Keith Propp) rejected these arguments [20], which precipitated a response from Rogers (near the time of his death) reporting the minimal effects produced on flax fibers by radiation of various kinds, whether this is from photons, electrons, protons, alpha particles, or neutrons [21]. Rogers' objections have not ended the possibility that radiation in the form of coronal discharge might be implicated, however, as evidenced by the recent work of Giulio Fanti, Francesco Lattarulo, and Oswald Scheuermann [22]. These claims and counterclaims demonstrate that evidence continues to be considered relevant to religious claims.

Another conjecture about ST image formation has been offered by Thaddeus Trenn, who introduces the term *weak dematerialization* to describe it [6, 23]. He conjectures that the strong nuclear force binding the nuclei of the Man featured in the ST was overcome, thereby freeing the subatomic particles forming the atoms involved. Energy would need to be *supplied* to the body of the Man of the ST to accomplish this, according to Trenn, energy that would be sufficient to replace the binding energy found in an object weighing about eighty kilograms (the estimated weight of the Man). Trenn estimates that the amount of added energy would be roughly that found in twenty-nine atomic bombs. In Rogers' discussion of Jackson's conjecture, Rogers interprets Jackson as supposing that energy was *released* from the mass of the Man in the ST, but Trenn is envisaging something different – sufficient energy coming *from outside the body* to overcome the strong force binding the atomic nuclei forming his body. Various effects from such a conjectured dematerialization might be expected, he writes, including the production of pions (real, rather than virtual) that would quickly decay

to produce x-rays, protons, and electrically charged muons [24]. Another effect would be the production of "Freed neutrons [that] would disperse with thermal velocity. But thermal neutrons impacting upon nitrogen, molecularly "fixed" in the linen cloth, would convert this *in situ* ^{14}N into ^{14}C thus augmenting the overall ^{14}C content of the Turin Shroud" [24]. The result, he says, would be variation in concentrations of radiocarbon, the highest being in the center of the cloth along its entire length, where the body earlier lay. Trenn makes some additional remarks about the "damage points" that collectively combine to create the subjective impression of a man on the ST, but even if Trenn cannot account for image formation, his conjecture about the fate of the Man of the ST is testable. It implies that *^{14}C distributions are not uniform* on the ST, which can be tested by placing photographic plates upon the ST, and encasing both in lead sheets in total darkness for some time [6]. This test could provide startling new evidence for the conjecture that the image was caused by a man who "broke apart at the subatomic level" – the promise of the Shroud. On the other hand, this test could falsify Trenn's conjecture, making us wonder again whether another conjecture might be found supporting the claim that a body disappeared in a way required by a resurrection that no one witnessed – the threat of the Shroud.

Trenn observes that to postulate the source of the extraneous energy in God would be to advance a conjecture he describes as "trans-scientific," and concedes that the Shroud might "elude the grasp of scientific methodology in virtue of the irreproducibility of the event complex that led to the evidence to hand," [24] as though to mark a difference between science and religion. However, the demand that science deal only with reproducible events only makes sense in those domains of exact study in which causal sequences can be controlled. In many domains we must wait to observe, as in cosmology, geology, meteorology, anthropology, and in other sciences. The concept of reproducibility does not completely define science any better than observability or falsifiability do, although these concepts are significant features of much of science. Whereas the ST itself is not an object that is reproducible, Trenn's suggested test is, for we can expect any test in Turin about concentrations of radiocarbon to be reproducible if the test were to be carried out on the ST in Rome or Paris. The irreproducibility of the ST does not render its study unscientific any more than does the irreproducibility of the Big Bang.

7. CONCLUSION

Religion shares a feature of science, for it is ultimately open to evidence for and against its claims. These claims cannot be tested in isolation, however. Like theories in science that postulate unobservables, the whole theory is

Proceedings of the International Workshop on the Scientific approach to the Acheiropoietos Images, ENEA Frascati, Italy, 4-6 May 2010

subject to evidence that augurs in its favor or against. Rorty's claim that evidence is irrelevant to religion is mistaken, as is Rogers' view that religious claims are never susceptible to testing. The ST image might in fact be a causal consequence of an act of God, and to assert this is not nonsense, just as the claim that "A-Something-we-know-not-what" drove evil spirits out of men into pigs is not nonsense. Some religious claims are capable of having evidence adduced for and against them. This evidence will be incomplete, but that is the nature of science and other exact studies that have emerged out of more than several centuries of scientific practice.

The hegemony of science in Western culture, and its decision to arrogate to itself the delineation of rational belief has put religion on the defensive, especially those aspects of religion that speak to God acting in the world. Some have retreated in the face of this challenge, modifying Christianity sufficiently so that our scientific sensibilities are never embarrassed, with the consequence that the Faith that is presented often has "no teeth." Historic Christian faith has maintained, however, that God has acted in the world, if not in Abraham, Moses and the other patriarchs of Israel, at least in Jesus, who is called 'the Christ'. Whatever might be said by biblical critics about his acts and his teaching, and about how much authority we can accord the NT sources, the Church can affirm his Resurrection as something open to evidence. The ST is relevant to this claim, either by offering evidence for the claim that a body disappeared in just the way that we would expect if a man came back to life when no one witnessed it, or by showing us the kind of evidence the Christian Church needs to adduce for its startling claim, but does not have if the Man on the ST is not Jesus. This is the promise – and the threat – of the Shroud.

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Proceedings of the International Workshop on the Scientific approach to the Acheiropoietos Images, ENEA Frascati, Italy, 4-6 May 2010

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