

DRAFT PROTOCOL
FOR THE NEXT EXAMINATION
OF THE SHROUD OF TURIN

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PREFACE

An earlier version of this paper, titled "Proposed Protocol," was presented to the STURP Board of Directors in a meeting in Rye, N.Y. 7-8 March 1987.

The proposed protocol was approved at that meeting. During the discussion a number of issues were addressed and various useful comments and suggestions were made. These and other subsequent suggestions have, to the best of my ability, been incorporated in this version.

Nevertheless, this is now titled "Draft Protocol," rather than simply "Protocol," unmodified. This is to emphasize its provisional character. While approved in its present form by the Board of Directors, it is a living document to be modified as requirements change or as new issues arise. The document can remain in its draft state indefinitely, absent approved examination of the Shroud. When a definite date is set the operative protocol for the examination will be the draft protocol then current.

Recipients of this paper are urged to review it carefully and to send me proposed revisions. To this end, however, I would urge that the revisions be matters of substance that, if adopted, will impact the testing to be done or the allocation of Shroud time. Wordsmithing the prose will add little to the enterprise. In the end these are matters of personal taste.

Further revisions to this draft protocol will be made as circumstances warrant. Should the weight of revisions be such as to change fundamentally the nature of the test program as presented here, further review by the STURP Board of Directors will be required before they can be adopted.

INTRODUCTION

In the fall of 1983 STURP submitted a proposal for additional testing of the Shroud to supplement and extend the work done in 1978. This proposal can be considered in two possible ways. In one view the proposal constitutes a complete set of all of the most necessary tests "...required to responsibly conclude our 1978 studies regarding the issues of (1) conservation, (2) image formation, and (3) relationship of the Shroud to the historical Jesus." [Ref. 1] At the other extreme, the proposal can be viewed simply as a set of ideas from STURP for tests relevant to the above objectives submitted for consideration by the Church. In this latter view the Church would presumably select such ideas as may relate to those objectives it feels are important, bearing in mind the risk of damage to the Shroud arising from the tests themselves or from the access to the Shroud occasioned by the testing and the subsequent publicity.

It is this latter view that is adopted in this test plan. There are three reasons for taking this view:

1. The STURP proposal clearly is not a complete set of all possible tests relevant to the stated objectives. At least two other sets of ideas have been submitted by other interested groups. [Ref. 2,3]
2. The STURP-proposed tests on their face cannot reasonably be expected to "responsibly conclude" an adequate study of the objectives (1)-(3) above.
3. The technical advisor of His Eminence Cardinal Anastasio Ballestrero has repeatedly emphasized that the concern is one of conservation and not image formation or "authenticity." [Ref. 4,5]

In light of this, the following test protocol has been formulated and submitted to the STURP Board of Directors for review and approval. Clearly any test protocol must be subject to continual review and

revision as priorities change, as new ideas are conceived, as new scientific techniques become established, and the like. Thus, a test protocol should be viewed as what will be done if executed "tomorrow." If the testing is done a year from now, the protocol will have been updated to take into account new ideas and new circumstances. Thus the test protocol is an evolving document, not a fixed set of unalterable decisions.

With respect to STURP proposals submitted in 1983 and not recommended here, the burden shifts back to the proposer to resubmit the proposal, addressing fully the reasons raised against it.

The test protocol presented here builds on two earlier sets of ideas that have been presented to the STURP Board [Ref. 6,7]. It also draws on the results of the 1986 workshop in Turin on radiocarbon dating [Ref. 8] and on subsequent discussions with STURP members and others. [Ref. 9,10,11]

In the following, first, and most important, the objectives of the testing are addressed. From consideration of these objectives, the 1983 STURP proposal is examined and the various Work Packages put in a priority order. Next, the functional organization of the testing is described. On this basis a test plan and a test schedule are presented. Outstanding technical issues are then summarized, and the technical objectives to be achieved at the Dry Run are indicated.

TEST OBJECTIVES

There are three possible objectives of further examination of the Shroud, each of which can be viewed as being independent of the others. These are:

1. Conservation - conservation covers a number of questions including:

- how is the Shroud cloth, viewed as an historic artifact, best preserved?
- how is the image on the Shroud best preserved?
- what are the technical trade-offs between preservation of the Shroud and its exhibition?
- what are the trade-offs between preservation of the Shroud and placing it at risk by undertaking scientific examinations in order to preserve it in a safer, more assured, or least costly way?
- what are the trade-offs between placing the Shroud at risk now by undertaking its scientific examination, versus doing nothing until more reliable or less intrusive scientific techniques are developed?
- how is the evidence of the origin and past history of the Shroud best preserved so that future scholars can extract more definitive information from it?

2. Image formation - "image" is to be understood as everything on the cloth that is witness to its origin including that which is referred to in Shroud literature as body image, blood, lymph, particulates, pollen, pigments, etc. Here also the questions are numerous and include, but are not limited to, the following:

- can one reconstruct three-dimensional information of a human body from the image?
- is the blood of human origin?
- does the blood image reflect uniquely the physical facts of crucifixion in general and the specifics of that of Christ in particular?
- do at least some of the particulates support the hypothesis of a first century Mid East presence?
- do at least some of the pollens and other biological or botanical evidence support the hypothesis of a first century

Mid East presence?

- is the alleged lymph real, and, if so, is it of human origin?
- is there evidence in or on the Shroud consistent with various burial customs ?
- how, in terms of physical variables such as energy, power, wavelength, temperature, time, etc. is the image formation to be explained?
- how are various image-formation hypotheses to be confirmed, supported, or rejected?

3. Authenticity - authenticity includes a number of specific issues such as:

- is the Shroud of fourteenth century European manufacture?
- is the Shroud of first century origin?
- is the image on the Shroud the work of man?
- is the Shroud evidence of an actual crucifixion?
- is the Shroud witness to the death of Jesus Christ?
- is the Shroud witness to the Resurrection?

From the welter of questions, issues, hypotheses, and objectives, how is one to proceed? Logic suggests the following order of priority for the three test objectives:

1. Conservation must be the most important test objective. What good is it to destroy all or part of the Shroud to establish its authenticity or to elucidate the last detail of the image formation process if in so doing one compromises or destroys a unique and priceless object?

Furthermore, scholarly methods and understandings improve with time. If information is not needed now for conservation, testing is better left until later when it can be done with more precision, with less risk, or for greater information yield.

It is critical to establish baselines from which rates of degra-

dation of the Shroud can be assessed, both on the basis of current and past information and possibly from future examinations, thus establishing the amount of time available to research questions and to institute conservation measures.

Finally, one argues it is better to assume that the Shroud is unique and authentic and to preserve it until proven otherwise, than to put it at risk only to find that the Shroud in fact deserved more care than was provided it.

2. Image formation studies fall into two classes: Those that tell how to prevent the image from fading or otherwise changing, and those that really shed light on authenticity or otherwise add to our understanding of the details of the crucifixion process, in general or in particular. The former are thus really conservation studies and should be considered for immediate action. The latter can be deferred at this time. Whether they are deferred or not depends on the value of the information that could be obtained compared to the marginal cost of obtaining it now, and the risk to the Shroud of obtaining it.

3. Authenticity is least important. Since science does not yield absolute truth, such scientific conclusions as will be drawn will be stated in terms of error bounds and statistical uncertainties and will be subject to future revisions as scientific tools become more precise. No theories, scientific, historical, or theological depend on establishing the authenticity of the Shroud at this time. The only important issue, perhaps, is if the Shroud were "proven" authentic whether the Church would expend more resources on its preservation. But for the reasons presented in the discussion of conservation, it is safer to assume authenticity and take steps on the basis of that assumption. In essence, one should give the Shroud the "benefit of the

doubt" for the present, at least until its preservation is assured.

This lengthy discussion is necessary because it is absolutely fundamental to the test protocol presented here. Conservation, and those parts of image formation that are necessary for conservation, constitute the only justification for any test proposed at this time. Proposals whose only purpose is scientific understanding and filling in details of the history of the cloth, or tests which have only weak, vague, or peripheral relation to conservation should be deferred at this time. Clarifying the relevance to conservation should be the only grounds for reclamation of a rejected proposal.

In this formulation of the test protocol the role of the conservators is key. They must:

1. Advise on key conservation issues to be addressed by the test program
2. Review all proposed tests for relevance to conservation
3. Assist in designing tests that are least intrusive and non-destructive
4. Monitor all test activities for adherence to best conservation practices
5. Undertake a research program directed to identifying and clarifying the critical conservation issues
6. Make recommendations to the Church concerning the future preservation of the Shroud

Previous test discussions [Ref. 1,2,3,6,7,8] all have as their premise that the Shroud is an object to be studied until man's curiosity is satisfied. The conservators view themselves as speaking for the inanimate object that can not speak for itself. This test protocol is based on the premise that the integrity of the object, not the curiosity of the experimenters, is paramount.

THE STURP PROPOSAL REVISITED

The STURP proposal can be usefully revisited in the light of the priorities established here, and by taking into account various revisions in the thinking of the Principal Investigators on the various Work Packages [Ref. 1]. When this is done, the following ordering into priority classes is obtained.

Work Packages Critical for Conservation

These include WP 4 and 5 whose Principal Investigators and Coinvestigators are textile conservators. They address questions of:

- the current physical condition of the Shroud
- long-range suitability of existing storage and handling procedures
- damaging environmental factors
- image degradation rate

Also critical are the Work Packages that address microsampling of the Shroud (fibrils, threads, particulates, etc.). These are important because they allow the determination of chemical identity of materials present on the Shroud. Some of these materials are inherent to the historical artifact (blood, pollen, etc.), while others potentially pose a threat to the integrity of the artifact (e.g., recent biological growths). Microsampling is also an example of a "low cost" approach to learning about the Shroud and its image since, for a very short exposure time and relatively unintrusive techniques, one can harness the intellectual energies of investigators worldwide as these samples are analyzed later in the investigator's well-equipped home laboratories. The tradeoff that must be made is the amount of sample removed (and the consequent damage of the Shroud or compromise of its integrity) against the value of the information that can potentially be obtained.