

ADDENDUM to:
“Portrait” from the Turin Shroud
An Artist's Study of the Shroud Image
by
Roger W. Basset



The material presented at the 2014 Shroud Conference laid the groundwork for utilizing computer imaging software for the purpose of adjusting variations in the image intensity and clarity due to variations in the image “pickup”, perceived as image drop-off in the photo-negative (see following “Portrait From The Turin Shroud” below). The process of clarifying the shroud image remains a work in progress and has continued to advance beyond what was presented at the time of the conference, eventuating this addendum.

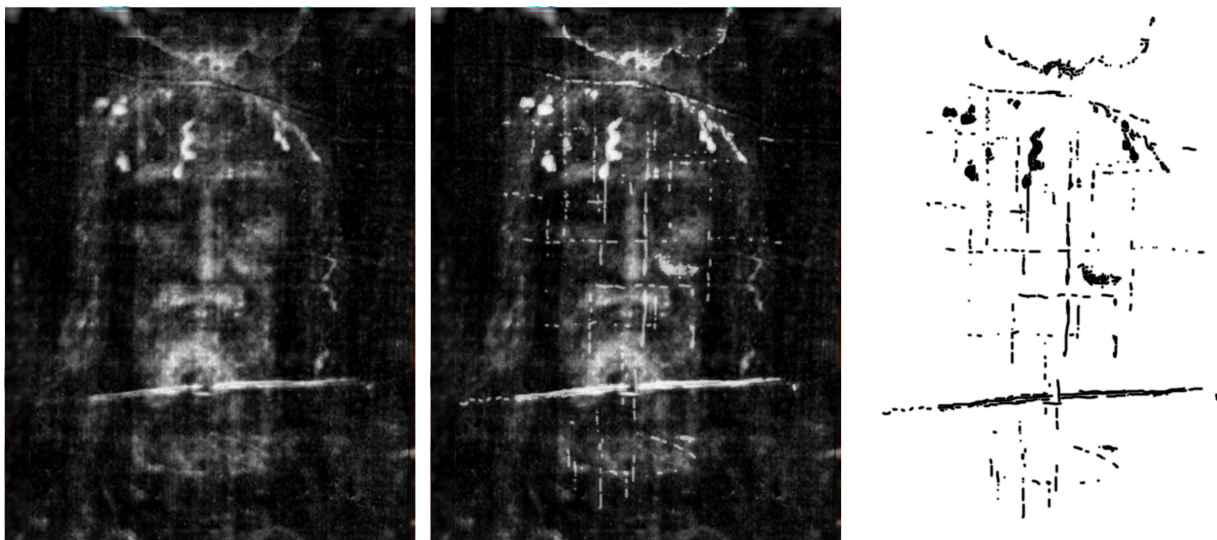
The conclusions drawn and presented in the previous material were the following:

1. It is the authors opinion that the shroud image is authentic and not the work of an artist or any other human agency. Clearly what is known about the shroud and the shroud image, historically and scientifically, give strong support to it being authentic. In addition to what is empirically known, the countenance and overall “portrait” is totally unique, both in the constructive elements of the image and the resulting specific likeness as compared to portrayals of Christ from the past 20 centuries. The asymmetrical shapes and unpredictable nuances of the shapes that constitute the image all conspire to reveal a remarkable countenance of poise and balance no artist has ever produced, much less in the negative.
2. Despite numerous elements of “interference” (crease marks, water stains, weave of the cloth, blood stains and scorch marks), the image is remarkably persistent. What constitutes the image (conjugated carbonyl) is dominant over the interference, however subtle may be the case.
3. Perception of the image is greatly affected by the interference, seemingly superimposed over the image. Due to the combination of pertinent and non-pertinent data, correct interpretation of the image and its anatomical shapes and relationships is difficult and open to misinterpretation.
4. The complexity of the image is such that only a small number of options can be exercised in its clarification without degrading what is offered by the original, i.e. that any change in the “essential shapes” constituting the image, and their geographic location, other than adjusting brightness, contrast and saturation, can only degrade the image.

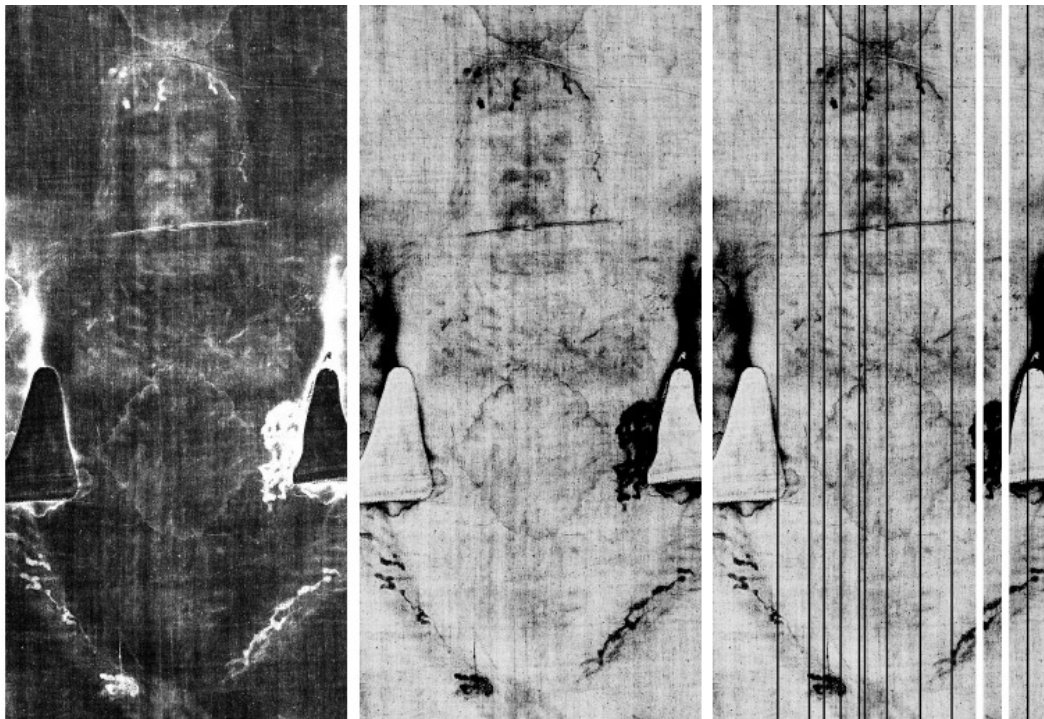
5. By adjusting brightness and contrast of the various elements of interference, and their surrounding areas, it is possible to clarify the image beyond the photo-negative stage. As demonstrated in the material previously presented, areas of extreme image drop-off in the photo-negative do contain image data but appear to be absent of such data at first glance.
6. The image that has developed as a result of this study is also unique when compared to forensic reconstructions, in that nothing was invented. All the values of data comprising the image are exactly what is revealed by the photo-negative and photo-positive images, simply enhanced for better viewing. The essential shapes of light and dark that comprise the image have retained the exact geographic locations of the original.
7. The countenance, free from the superimposed interference, is rich in detail and clarity including particulars to the anatomical structure that compels the viewer to take notice, not merely a shadowy by-product of draping a human form with a sheet of linen, suggesting the image was intended to be seen, with great clarity, by the source of its creation,

The following is an abbreviated synopsis intended to explain in layman terms the methods employed in clarifying the image. .

After mapping the various elements of “visual interference” such as crease marks, water stains, blood, shroud weave and both vertical and horizontal bands of threads that stand out on the cloth, those areas of the image were then adjusted in terms of brightness and contrast to compensate for the interference.



In addition to the interference shown above are the areas on the cloth that create the “banding effect”. Due to the bands that run vertically on the cloth there are areas of low image pickup, where there appears to be almost no image at all. These areas were also adjusted so the visual data of low pick-up could be better viewed.



Because the elements of interference are not immediately recognized as being separate from the actual image, they influence what the viewer sees. Consequently, what many people see in the shroud image at first can be misleading.

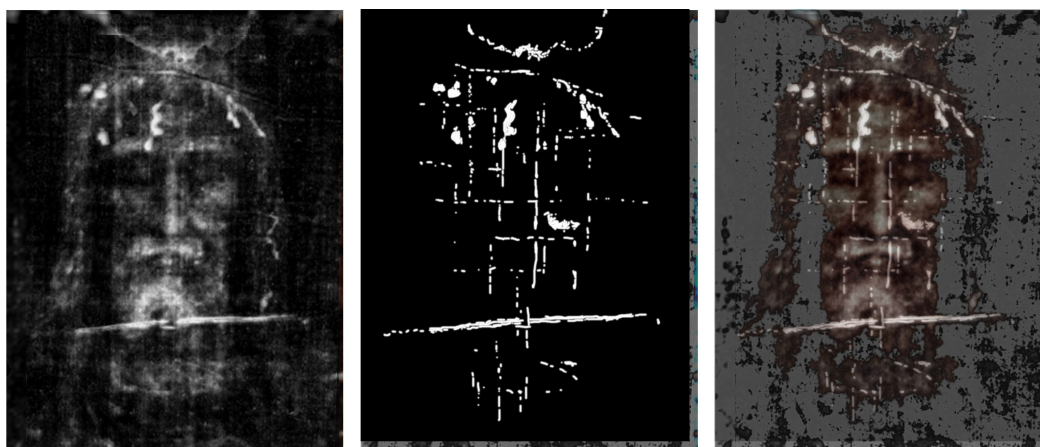
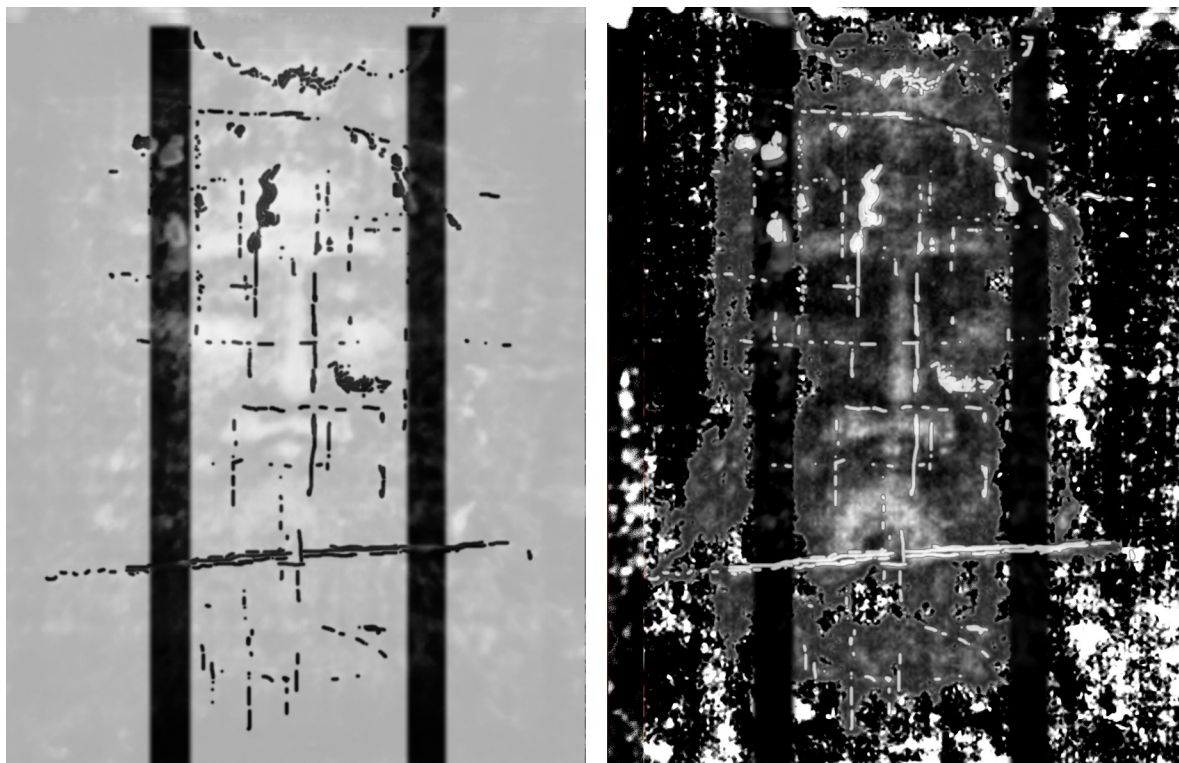


Photo-negative original

Non-pertinent data

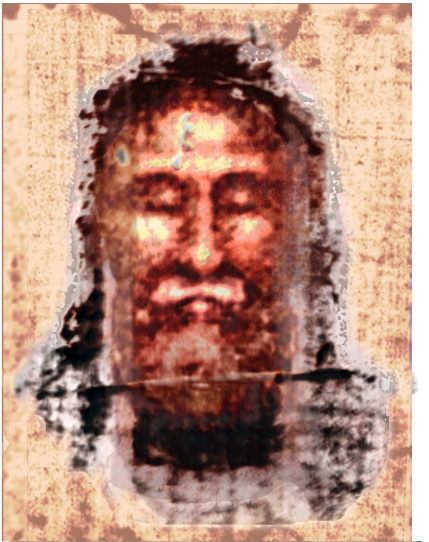
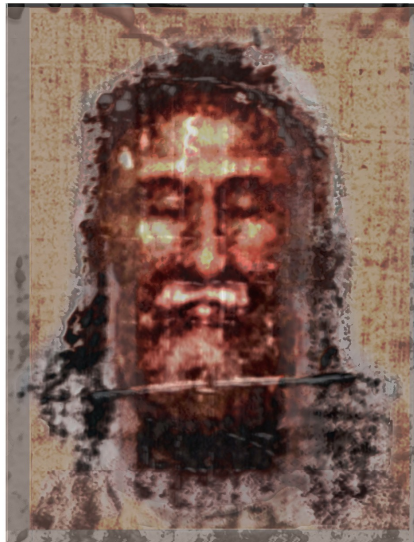
“Banded” regions high-contrast positive

The image below illustrates where the general banded regions and the various horizontal and vertical threads are. The highlighted threads, crease marks and image drop-off in the banded regions conspire to confuse the actual image.



The combination of extreme image data drop off in the banded regions along with the other elements of interference create confusion in understanding the actual anatomical shapes that constitute the likeness. The untrained eye is not familiar with these anomalies and consequently sees the extraneous features as one with the actual image. This effect imparts a peculiar quality to the perception of the image similar to actual distortion. However, after adjusting for the variations in image pick-up, particularly in the areas of the cloth where banding occurs, the sense of distortion disappears.

The sense of “distortion” is in part due to the banding effect, particularly as it runs along the right side of the face, and partially due to what appears to be a slight tilt of the head downwards and to its' left.





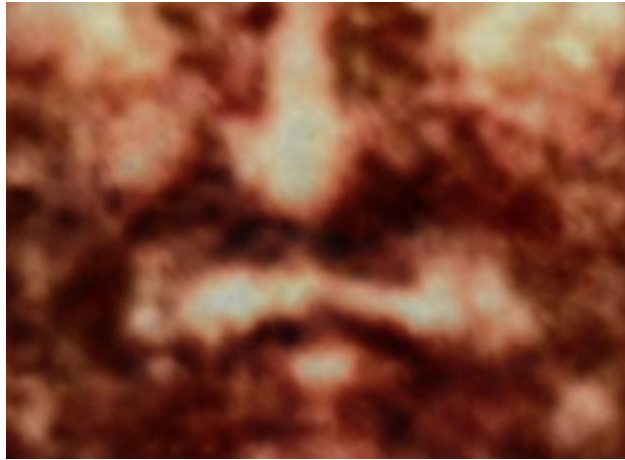


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Roger W. Basset



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(slide-1)

Introduction

(slide-2) My interest in studying the image on the Turin Shroud was born from a curiosity to know better the likeness on the shroud and what my perceptions were causing me to experience. As an artist it was natural to inquire about an image, its components of technique, its usage of symbolism and what that represented. It was the desire to know the truth of what I was seeing when I looked at the shroud image that has compelled me to continue its study.

Noticeably the image looks quite different depending upon the degree of contrast the photograph being looked at provides. Depending upon the photographic intentions of the camera exposure, the image could range from extremely faint where the weave of the cloth is predominate, to that of a human anatomy which is rich in detail of recognizable form. So a question developed in my mind: which particular photographic version is the clearest and most accurate representation of what we see when viewing the image on the cloth?

In addition, an interesting phenomenon emerged over time that has held my attention ever since. When I initially looked at photographs of the shroud, specifically the photo-negative image, it appeared distorted and anatomically incorrect to me. Gradually as my eyes became more familiar with the various nuances of the cloth, and the collection of elements that did not pertain to the image itself, the appearance of distortion gave way to an image that appeared quite clear and anatomically normal. This aspect of the image became one of its most intriguing qualities to me, as if there was more than one image to be gleaned in perceiving the visual data that constituted what was ultimately experienced by the viewer.

Other questions arose as this pursuit continued, not least of these was whether there was a limit on the clarity with which the image could be rendered? What would a clarified version reveal about other aspects of the cloth? Would a visual clarification of the image reveal a “definitive” likeness? What were the artistic implications of deriving a definitive likeness?

First Impressions

In mid 1978 I read an article by the London Times Magazine reviewing Ian Wilson's book "The Shroud of Turin". I found the article lying around one of the studios at the Royal Academy of Arts School where I had been a student for the past three years and at that time displaying my graduation exhibition. The article had two photographs showing the frontal and dorsal photo-negative images and the facial image on the shroud. What caught my attention immediately was the weird, seemingly distorted, image that would garner such attention as to be published and reviewed by the London Times. I quickly dismissed the shroud as a very amateurish attempt by some unknown artist at fooling the religious public. It just didn't look even remotely real to me.

I did find the theory intriguing that the shroud had been the basis for the familiar likeness of Christ that has come down through the centuries of western art history. Although the image appeared mask like and distorted to me, I acknowledged that the photo-negative looked somewhat more realistic than the natural image artists prior to photography would have had access to. Because of these two factors I decided to do my own rendition from the photo-negative image to see what I would come up with.

Originally my studies of the photo-negative image were free-hand pencil drawings on paper. As my pencil drawings developed one anatomical feature that caught my attention as unique amongst artistic renditions of Jesus were the "character lines" around the area of the mouth. I had never seen such pronounced character lines as those around the area of the mouth and mustache in artistic depictions of Christ.

The closer I looked at the image the more I began to perceive a depth of visual information which had previously eluded me. Although the image of the face on the shroud still appeared flat and mask like, there began to appear a very complex network of dark and light shapes, especially within the darker regions, that seemed much more like an actual photograph than an artist's creation.

A Closer Look

As I compared my drawings to the photo-negative I was working from, although interesting, the drawings still had a slightly cartoon look about them when compared to the original. The original had an authenticity about it that my drawings were failing to capture. It was at this point that I began to realize the importance of keeping the shroud image data intact when attempting to render it free from extraneous visual noise.



Study from the shroud photo-negative
graphite on paper 1978

In order to be more accurate in my renditions I began using acetate overlays to trace the actual shroud weave as a form of half-tone leaving behind elements that I could perceive of as noise. This was before personal computers so my efforts were still limited to working in the darkroom developing different exposures of the image to piece together so as to enhance the areas of extreme image drop off. The resulting images from these overlays were capturing more accurately the shroud image than did the earlier pencil drawings, but to do the clarification correctly I would have to wait until desktop publishing tools became available to me.

Clarifying the Image

With the advent of desktop publishing tools and the host of photo imaging software that was soon available to me, the work I was doing in the darkroom was now replaced with tools such as Adobe Photo shop. Features common to many graphics applications as well as many different methods of selecting parts of the image were used, thus applying changes selectively without affecting the entire picture.

(slide-3) There are three basic forms of interference that were addressed using the imaging software to clarify the shroud image.

1. Cloth degradation. This includes anything extraneous to the image that stained or damaged the cloth such as blood stains, water stains, scorch/burn marks, dirt etc.
2. Banding effect. The shroud has both horizontal and vertical bands that modify the appearance of the image.
3. Variations in cloth topography. During the time of image formation these variations would have affected the body-cloth distance.

Cloth degradation. The extraneous damaging effects of time that would be expected on any old piece of cloth such as the collection of debris that would have soiled the fabric. There is also the additional influence on what is perceived by the various elements of interference such as the herringbone weave of the cloth, crease marks, scorch marks, water stains and elements that may have affected the image uptake during its formation.

Banding effect. The shroud has both horizontal and vertical bands that modify the appearance of the image. There is both reflective banding and transmission banding. The banding phenomenon is very evident in the region coinciding with what appears to be the sides of the face. There seems to be an unnatural absence of visual data due to a decrease in the image uptake. This imparts an overall unnatural appearance to what would seem to be the sides of the face and consequently the entire face and its proportions in relation to the full length figure.

Variations in cloth topography. In addition to the banding effect, variations in the body-cloth distance due to aberrations in the cloth drape may also explain the unnatural image drop-off in certain areas. In areas where detail was successfully brought out by adjusting luminosity, independent of any effect from banding, an aberration in the drape of the cloth during image formation may be suggested. Such an aberration is an unknown and hence a conjecture but certainly a possibility worth considering. It is natural to assume that there was some degree of "drape" to the cloth during the time of image formation. If this was the case, then it follows that some degree of "anamorphic" distortion to the image would exist when the cloth is flattened out. This could range from extreme to subtle, we just do not know. If the degree of drape was subtle enough, this kind of distortion would not be noticeable.

Technical Challenges

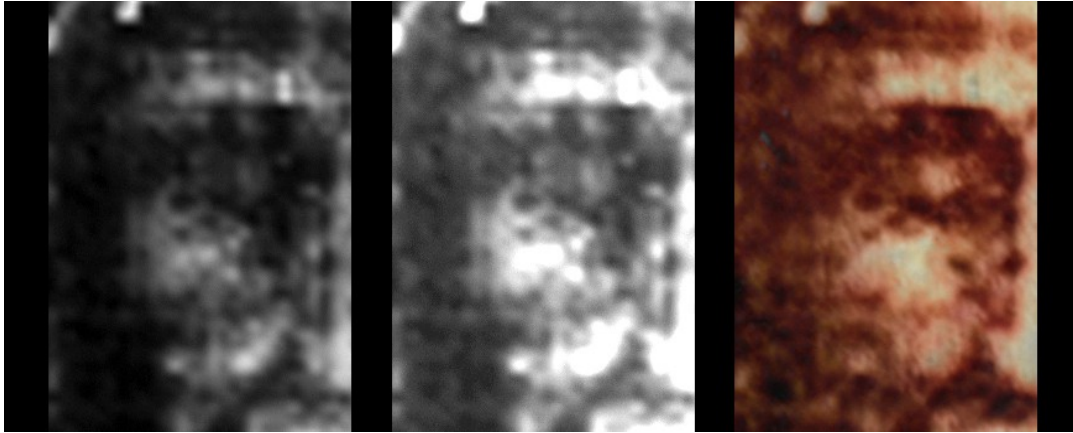
(slide-4) Perhaps the biggest challenge in clarifying the shroud image was avoiding the mind's tendency toward "patternicity", that is the finding of meaningful patterns in meaningless noise. To assist in keeping the subjective element from taking over, certain 'rules of engagement' so to speak were defined and adhered to. In order to ensure accuracy and truthfulness in clarifying the shroud image using image enhancement tools, there were certain standards applied in relation to photographic manipulation and techniques. The first and foremost rule was that the photographic images of the shroud should not be altered from the reality they represent, that there would be no altering of the essential shapes, only enhancement so they may be seen better, that the photo's content, the positions and appearance of essential shapes, should never be changed or manipulated. Enhancing the technical quality of a photograph was acceptable, but changing anything to alter the meaning was not. Digital equivalents of established darkroom practices such as adjusting brightness and contrast were permitted, as were color additions using the channel mixer and saturation levels. Digital tools were permitted to diminish or accentuate visual elements, but never to eliminate those elements entirely. The goal was to produce images that were credible and genuine.

It is important to note that due to the complexity of the shroud image and because for every adjustment made to any given area the perception of the surrounding areas is effected, thus affecting the interpretation of what is actually there, this process of clarification is a continuing "work in progress". There are still some areas that are in need of greater clarification and delineation. Much more clarification can be done over time.

(slide-5) My presentation is a brief overview of the methods used in the image clarification as well as some points of interest about the image and some conclusions. For convenience of explanation I have divided the image into 4 main quadrants. Using the common photo tools of brightness and contrast, it is possible to adjust the areas that appear to be absent of visual data, and reveal meaningful data. Colorization is achieved by adjusting Channel Mixer, Hue and Saturation levels.

Study of the First Quadrant

(slide-6) This sequence of images demonstrate how raising the luminosity, while over-exposing some areas, reveals “essential shapes” within areas of low data pickup caused by banding effects and aberrations in the “body-cloth distance”.

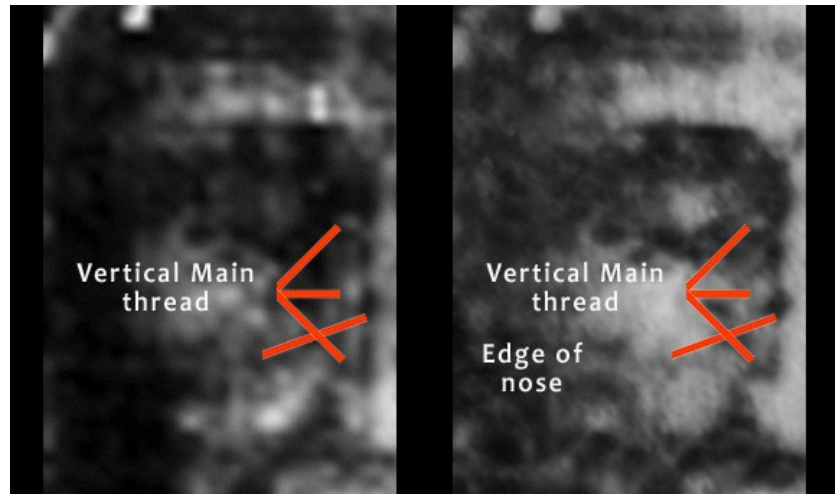


On the left is the original, the middle image is with the contrast raised to reveal essential shapes within regions affected by variance in data pickup and the third image is the enhanced version with colorization using channel mixer and hue/saturation adjustment.

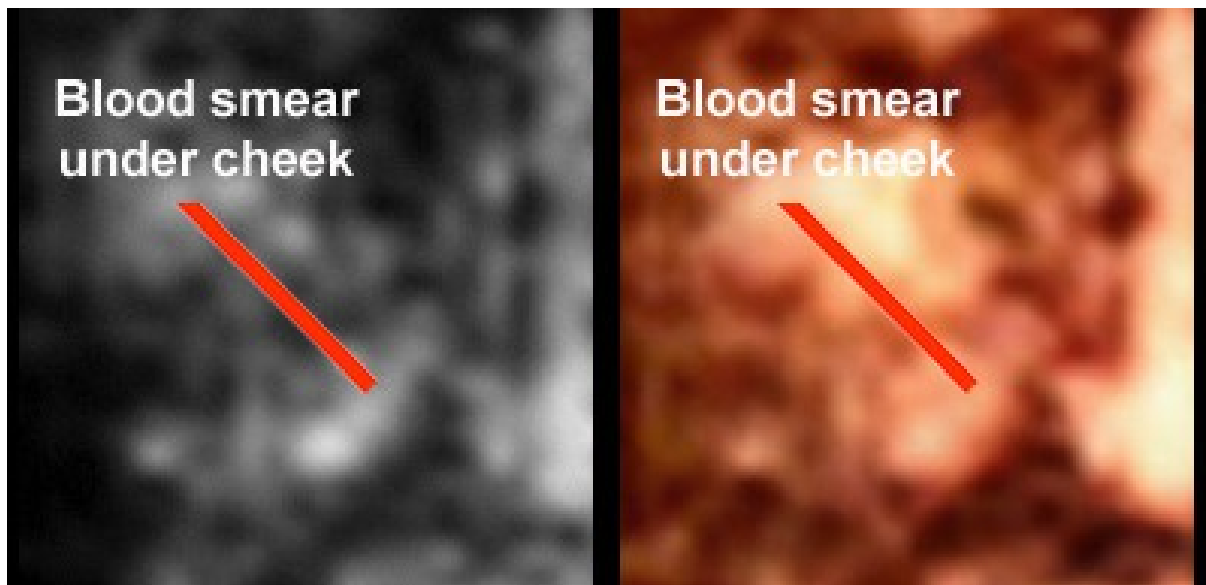
(slide-7) A particular element of interference, a vertical main thread running almost tangential to what appears to be the right side of the nose where a turning point would naturally exist. This causes confusion in the perception of the true turning point.



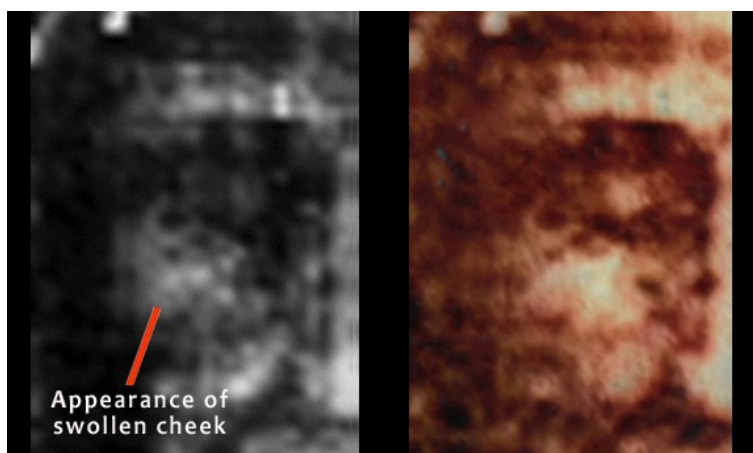
(slide-8) Instead of simply filling in an element of interference like a thread, it was “equalized” by increasing the luminosity of the surrounding areas. In so doing the visual element of the thread is diminished but not eliminated entirely.



(slide-9) Directly under the right cheek and to the side of the nose is a highlighted shape that is conjectured to be either a blood smear or a smear of some kind of fluid that had high image uptake. As the surrounding areas were adjusted to bring out more detail (raising luminosity), the shape remained but became more neutral due to the decrease in the simultaneous contrast.



(slide-10) The right cheek of the image (viewers left) has been described by examining forensic pathologists as being extremely swollen or bruised.



This kind of wound to the face is consistent with the gospel accounts of Jesus' treatment after his arrest:

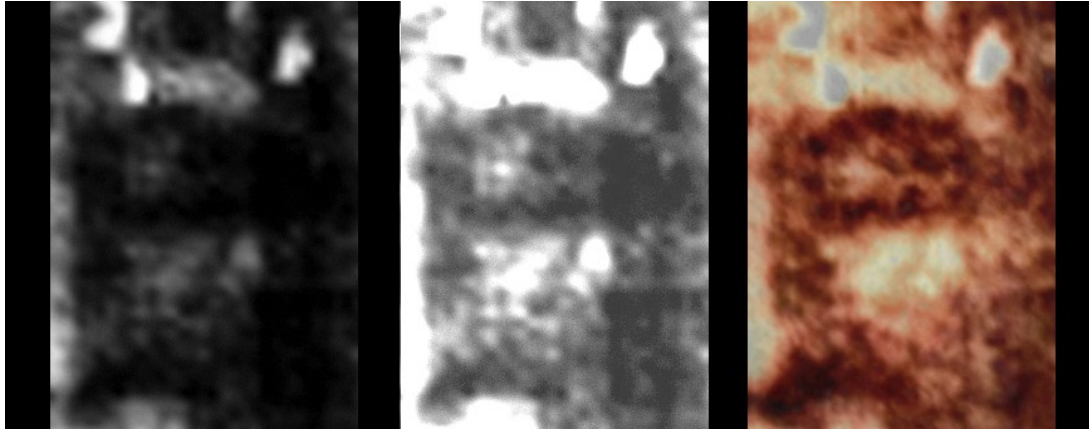
“... And when he had said this, one of the officers standing by struck Jesus with his hand, saying, Answerest thou the high priest so?--John 18:22

“Then did they spit in his face and buffet him: and some smote him with the palms of their hands...”--Matthew 26:67.

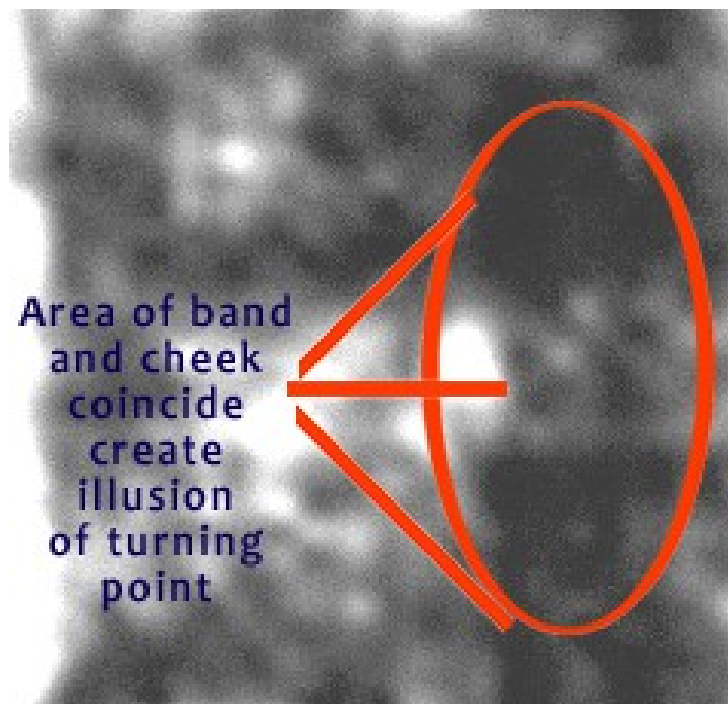
The perception of this may be correct, but this is still only conjecture. As demonstrated, when the sides of the face are opened up by adjusting for the banding effect the image drop off is lessened and the appearance of a swollen cheek is also decreased due to a decrease in the simultaneous contrast.

Study of the Second Quadrant

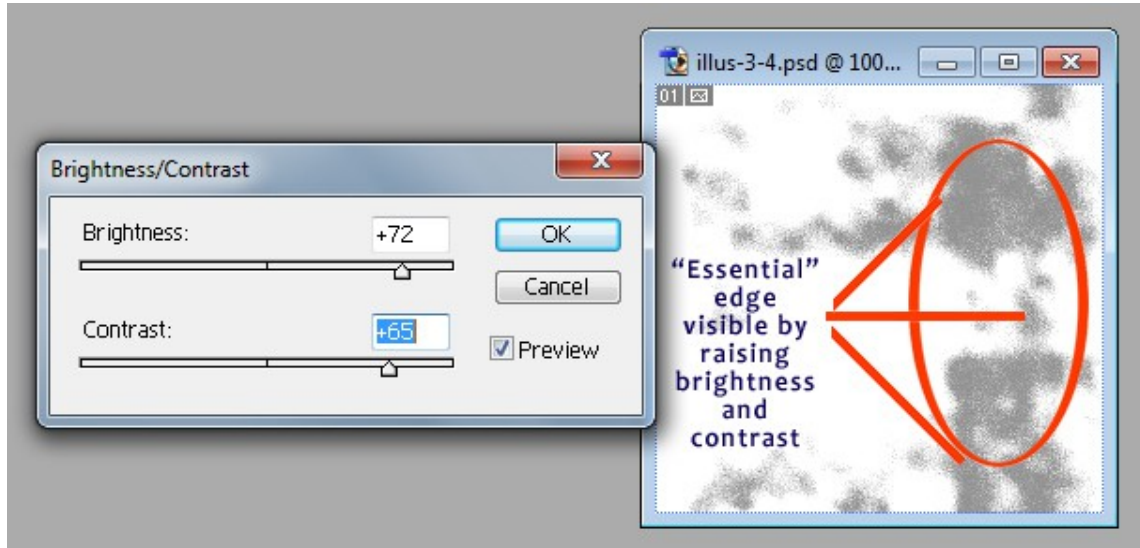
(slide-11) Example of shapes normally difficult to perceive due to variance in image data pickup.



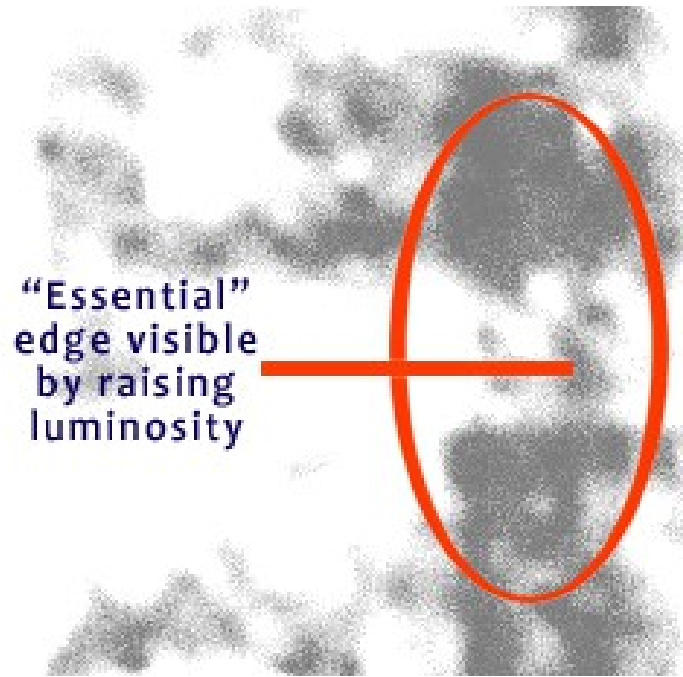
(slide-12) The banding effect is also evident in the second quadrant creating a false edge of the face. The area of the cheek bone in this quadrant lacks the swollen appearance of the cheek in the 1st quadrant. Instead there is what appears to be a sharply defined turning point or edge to what appears to be the left cheek bone area.



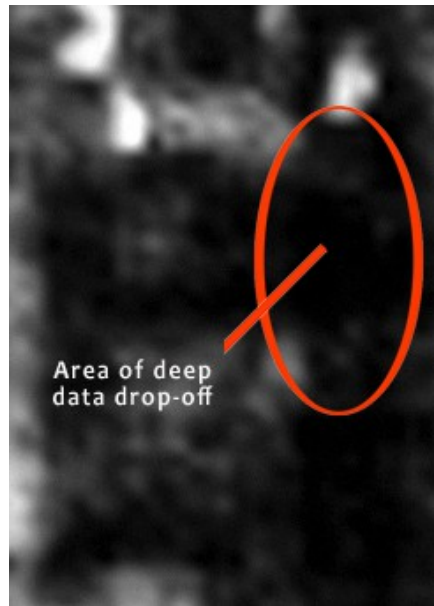
(slide-13) Raising the brightness and contrast reveals “essential” edge normally hidden from effect of the banding.



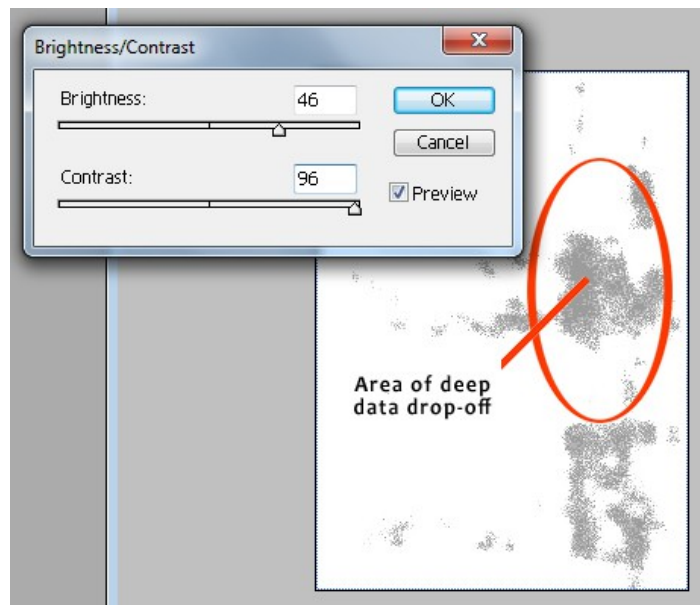
(slide-14) As a result of raising luminosity, other essential shapes are deleted leaving the essential edge.



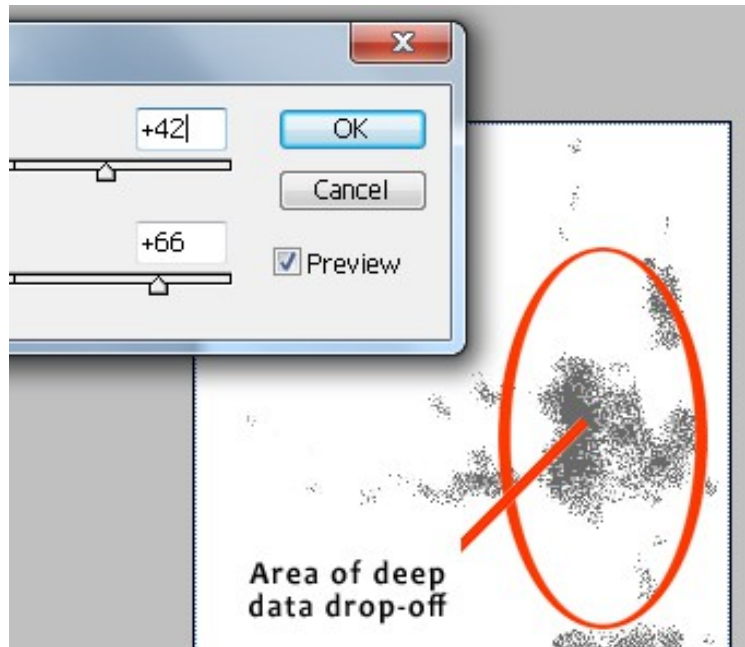
(slide-15) The area to the viewers right in the second quadrant is an area of deep data drop-off where at first glance there appears to be no data at all.



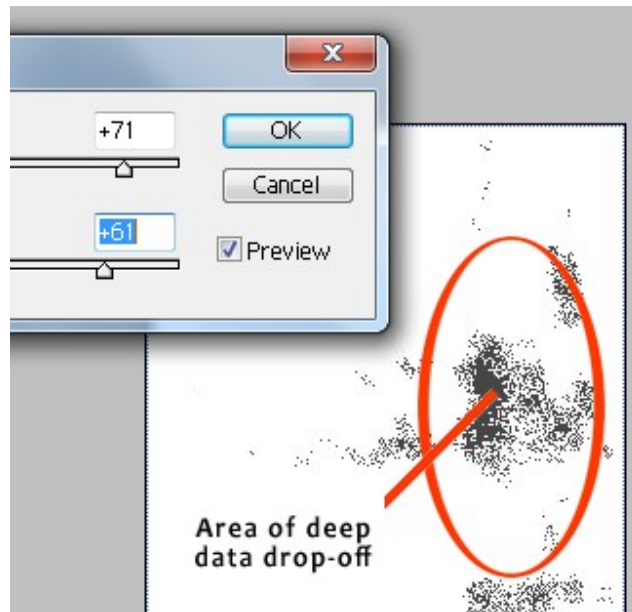
(slide-16) Adjusting brightness and contrast allows for better visibility in the area of deep data drop-off shown above.



(slide-17) Repeating the process, i.e. applying adjustments then beginning again, refines the blurred mass into more distinct shapes.



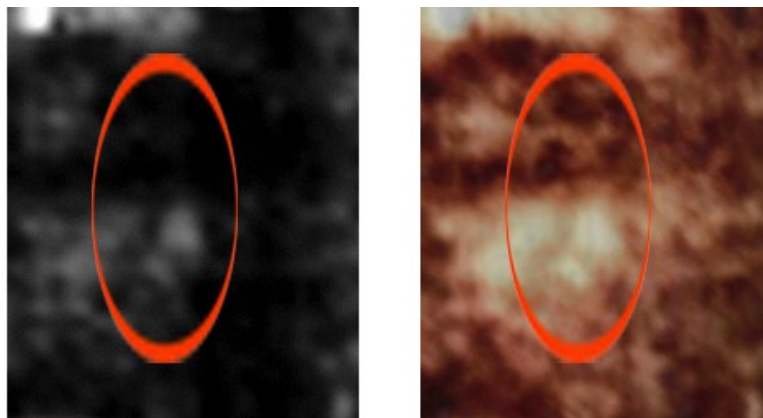
(slide-18) The process can be repeated numerous times so the essential shape is revealed (see below).



(slide-19) Adjusting the area of deep data drop off reveals the essential shape that also runs tangential with the false edge created by the banding effect.



(slide-19)

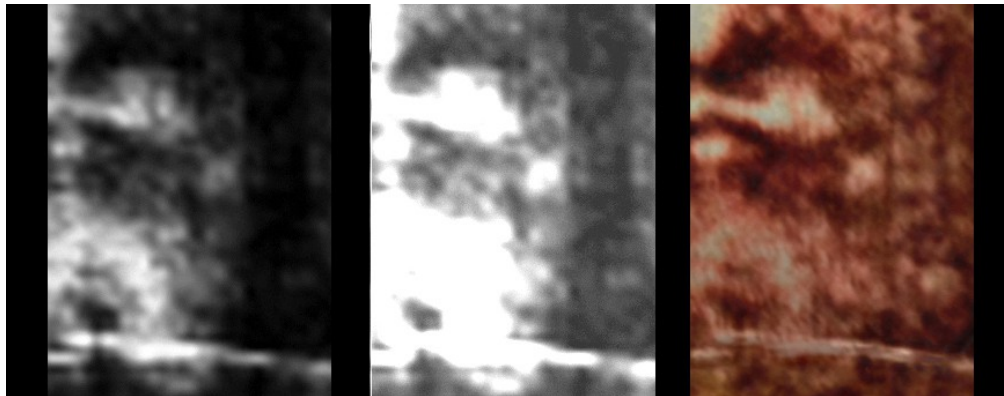


Study of the Third Quadrant

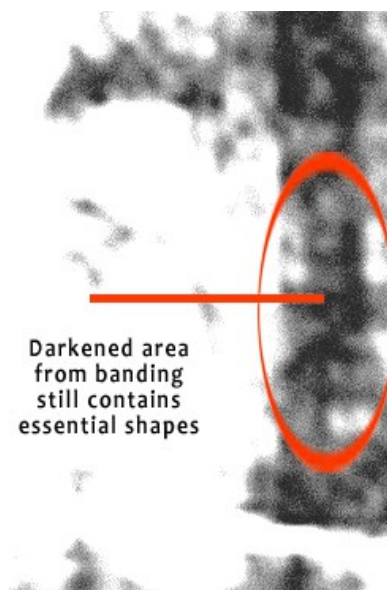
(slide-21) The same processes were applied to each quadrant. Again, the banding effect is very noticeable running along the side of the face, along the area of what appears to be a bearded region. After raising the luminosity in that region, essential shapes are revealed that seem to be an extension of the beard into those regions

The darkened area in the third quadrant coincides with an area of banding and initially appears as a solid dark mass. By adjusting the brightness and contrast levels the essential shapes and true turning points are revealed.

Example of shapes normally difficult to perceive due to variance in image data pickup.



(slide-22) By repeating the process of adjusting brightness and contrast the essential shapes are revealed.



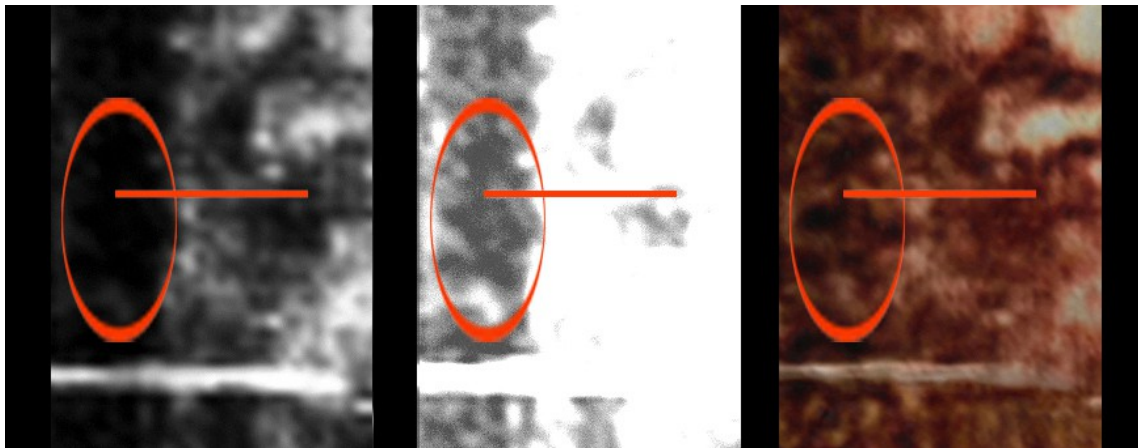
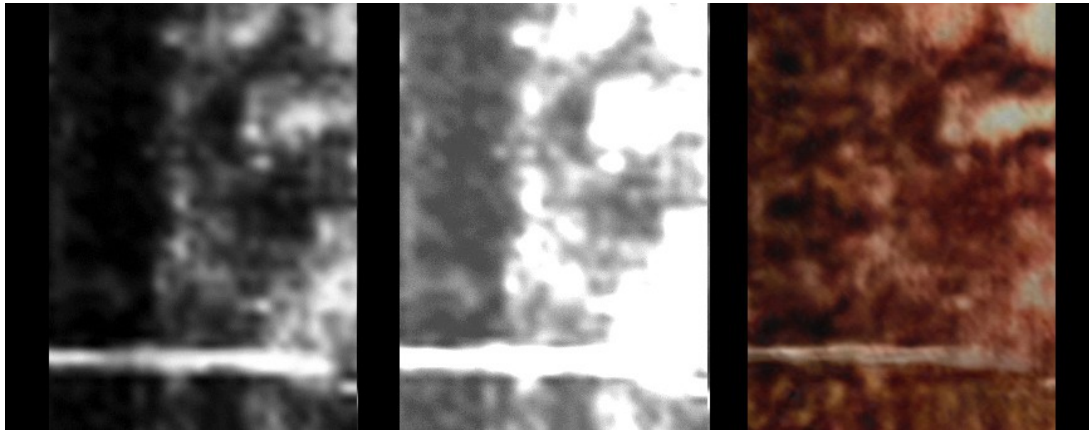
(slide-23) One of the effects of the interference is the recognition of “false” edges or turning points to the form. For example, the banding effect on the left side of the face, seen in the third quadrant, obscures the true edge of the beard in the dark regions of lesser image pickup, creating the illusion of a false edge.



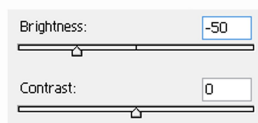
The fuller beard may have assisted in lessening the distorted look of the image. If the beard was in fact full as the adjusted image suggests, it may have been responsible for the overall lack of distortion by the way it helped flatten and support the cloth in that area. Any drape of the cloth is still conjecture as we just don't know how the cloth draped. Because the shroud is a topic that includes the “miraculous” anything may have been possible, even the cloth being completely flat like a photographic plate. That having been said, viewing the shroud through the lens of natural physical laws the drape may have been anything between a very extreme drape to being almost flat due to elements that may have lent the cloth support such as the fuller beard or something packed around the body such as spices and incense. We just don't know.

Study of the Fourth Quadrant.

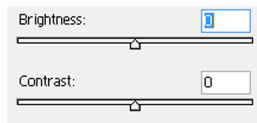
(slide-24) The effects of the banding create the illusion of “false” edges or turning points to the form. For example, the banding effect on the right side of the face, seen in the fourth quadrant, obscures the true edge of the beard in the dark regions of lesser image pickup, creating the illusion of a false edge.



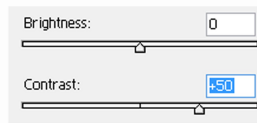
By adjusting the contrast to 100% the areas of extreme image drop-off become apparent.



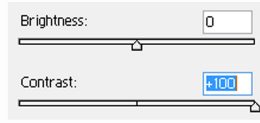
(fig. 1)



(fig. 2)



(fig. 3)

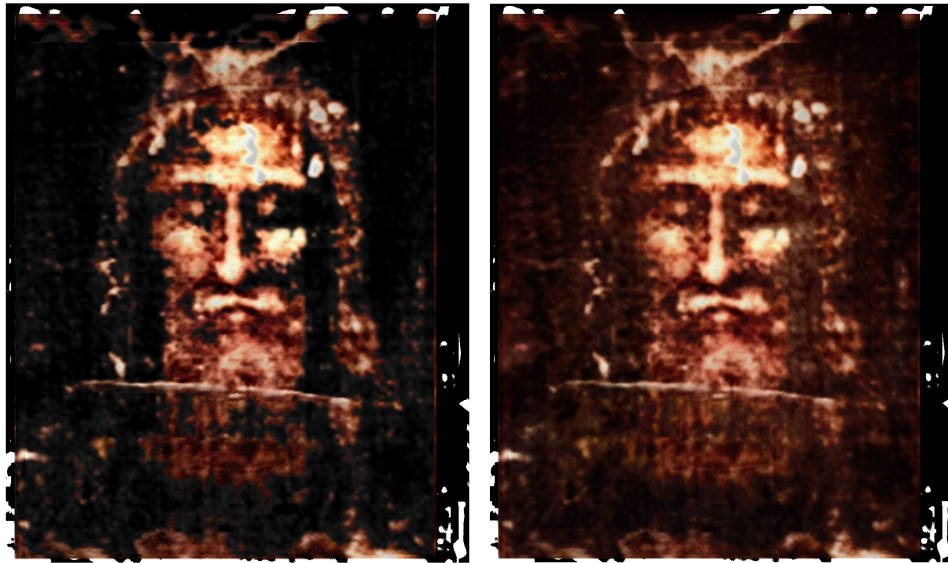


(fig. 4)

The areas to the side of the face drop off abruptly creating the illusion of a much narrower beard and elongated face proportionately.



Gradually the visual data within the areas of extreme image drop-off are made more visible by adjusting the luminosity.



The narrow look to the face resolves itself as the areas of image drop-off are “equalized” to become a seamless transition into the other areas of the facial anatomy.



From 3-dimensions to 2-dimensions

(slide-28) It is well known and accepted that the shroud contains 3-dimensional information as has been verified by the VP-8 Image Analyzer results.* The work of Jackson, Jumper and Schumacher prove that the image on the Shroud of Turin is encoded with brightness encoding that translates to 3-Dimensional relief. However, the human eye does not recognize only the 3 dimensions of an object, but also recognizes shapes based on directionality of lighting and the shadows cast. For that reason when viewing the shroud image there is a tendency to interpret the 3-dimensional changes in data pick-up or drop-off as a shadow due to a lighting effect. This explains partially why the image appears mask-like and distorted when initially viewed.

As mentioned earlier, essentially there are two shroud images, one the inversion of the other, photo-positive and photo-negative. The following sequence of images illustrates how a particular usage of the positive and negative images together converts the 3-dimensional information into a more 2-dimensional format by equalizing the contrast inherent in the 3-dimensional data, resulting in an image that resolves the issues of distortion and proportion, revealing the face in the shroud with more clarity and understanding than before. One might conjecture that the shroud contains it's own "auto self-portrait", that it presents itself as an intentional portrait of the man of the shroud, with no need for interpretation, meant to be seen as the image on the cloth seemingly intended itself to be seen.

* Sandia Laboratories 1976

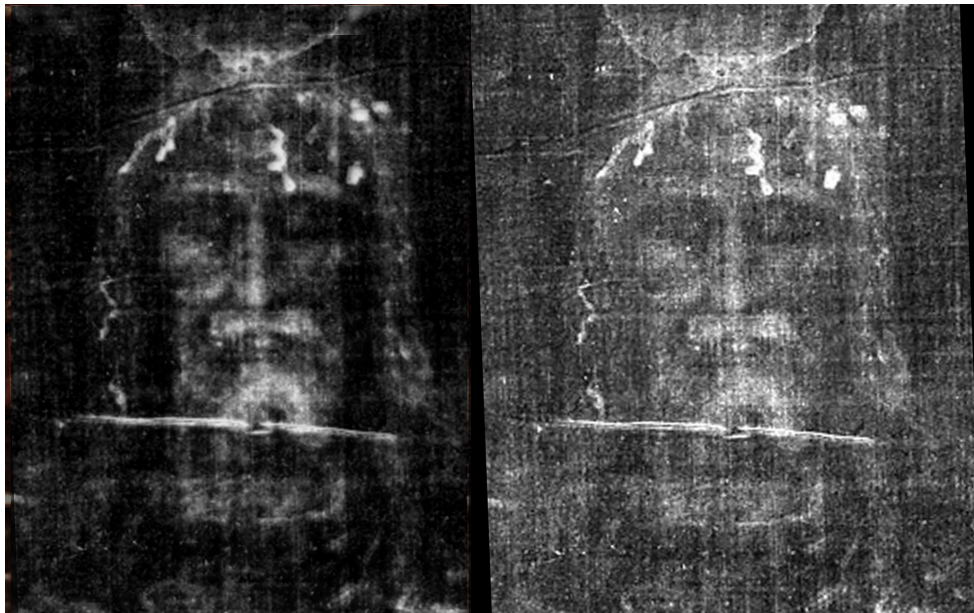
Step 1: (slide-29)

The original photo-negative on the left and the same image on the right with the brightness and contrast adjusted so more can be seen within the banded regions and shadow areas of image intensity drop-off:



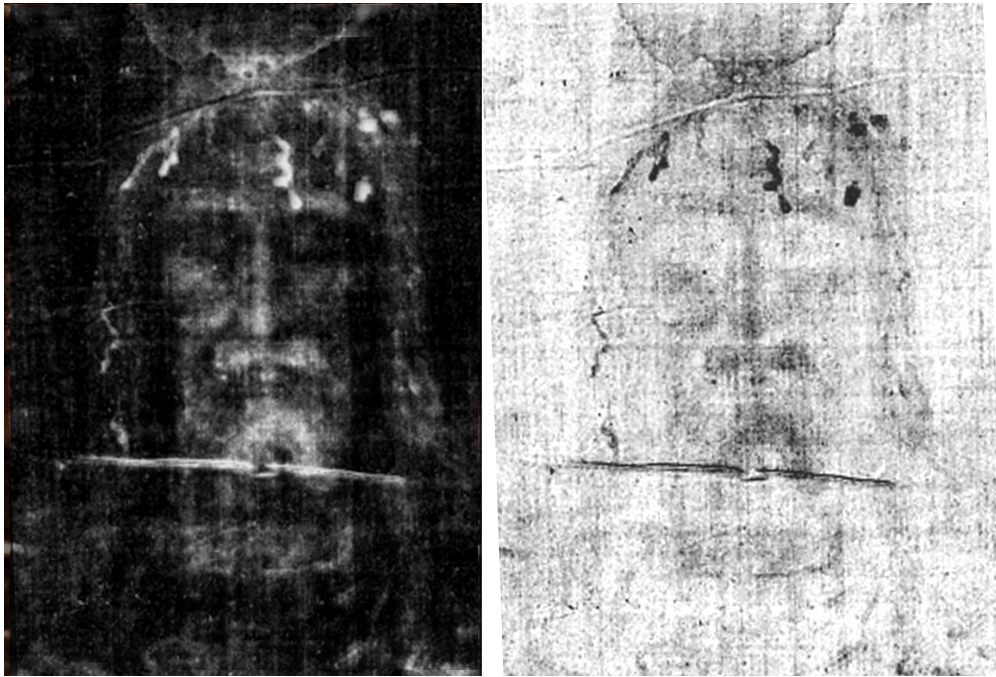
Step 2: (slide-30)

Place another layer of the original (in this case very high key) over the first image (above):



Step 3: (slide-31)

Invert the new layer:



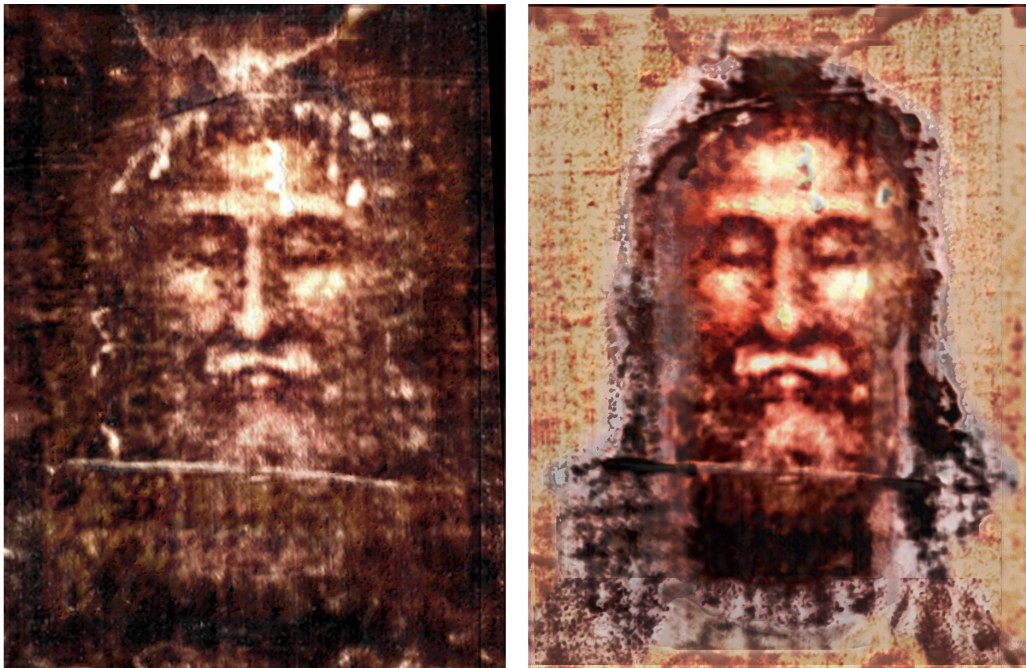
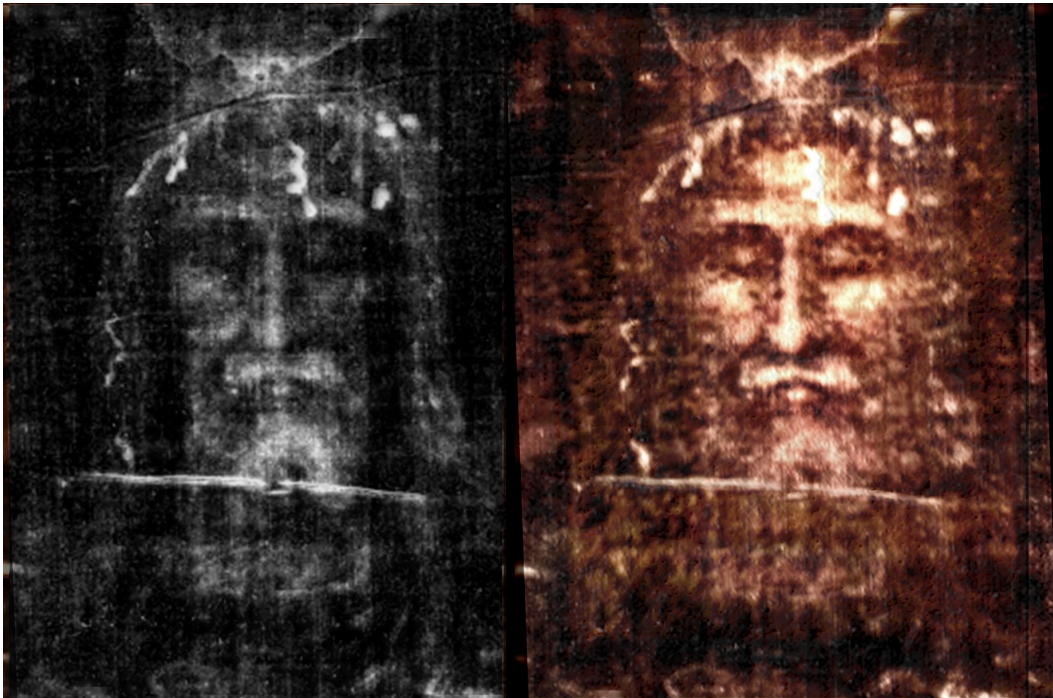
Step 4: (slide-32)

Reduce opacity of the inverted layer to 33 percent:



Step 5: (slide-33)

Composite the two images and increase contrast and decrease brightness:

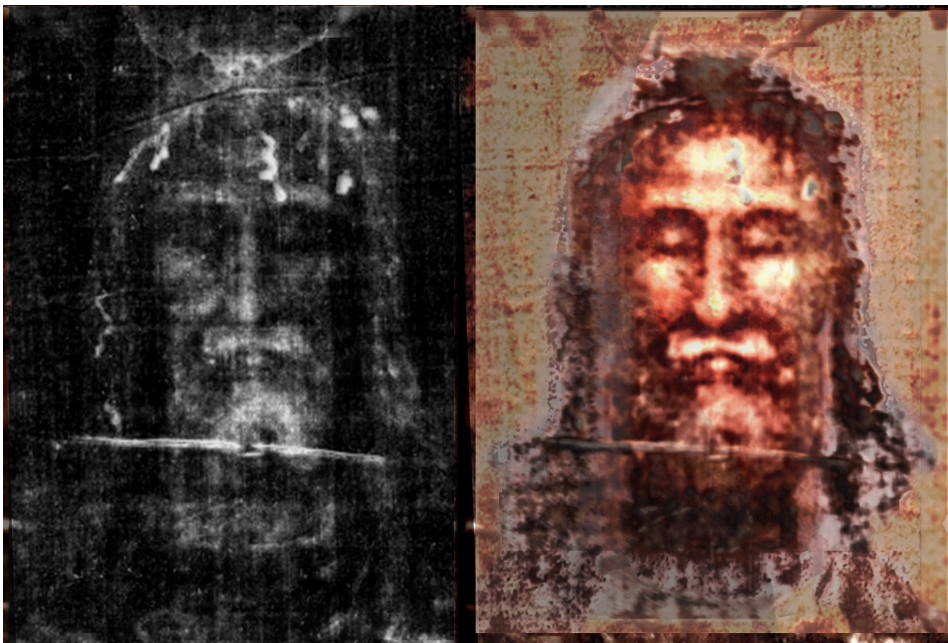


The “Portrait” from the Turin Shroud – A New “Vera Icon”

Although variations exist, images of Jesus have in common a number of traits which are now almost universally associated with his depiction. The shroud image not only contains all of the major traits, but the enhanced image provides much more. It is rich in detail commensurate with an age of scientific accuracy. To the artist whom the sublime mission has been entrusted to make present and reveal the face of Christ to the human person, the shroud photo-negative, particularly the accurately enhanced version, should be considered an essential starting point of study. The definitive likeness provides both a familiar as well as an authoritatively updated form consistent with a post-photographic world view of reality.

As discussed earlier there is a limit with what can be done with the visual data without degrading the integrity of the “original” image. It can be sharpened, it can be blurred, the contrast-brightness-saturation can be increased or decreased and the image can be inverted. But if anything is invented the image becomes noticeably degraded. By retaining the integrity of the actual visual data of the original, adhering to the rules of “enhancement” discussed earlier, the resulting image is a form of "auto self-portrait of Christ", meaning it created itself with no outside influence. The shroud image presents itself as itself, right down to the positioning of the head and the corresponding expression. Nothing can be added or taken away without degrading what the shroud image presents as self-evident.

As the Veil of Veronica has been referred to as Christ's own "self-portrait" this “auto self-portrait of Christ” is a new “Vera Icon”, a new True Image. Like all self-portraits, it reveals insights, both personal and profound about the inner state of its creator. Perhaps the shroud image, with its definitive likeness, could provide the significant challenge to artists of the future interested in the visual portrayal of Christ.



With the retrieval of the visual data in the banding region, and adjustments made for variations in the body-cloth distance, the distorted look is reduced and the image looks more normal. The transformation is quite dramatic, and yet the visual data that comprises the essential shapes are the same as the original.



The overall size of the face in the enhanced version seems to be in better proportion to the rest of the body than the original, especially relative to the hands.

In discussing the overall anatomy of the shroud image the possibility of anamorphic distortion due to the image being mapped onto a topographically irregular surface, i.e. irregular cloth drape, should be considered. A study of the hand area (illus. 1) of the shroud image showing the estimated width of the hand as $\langle X \text{ distance} \rangle$ (illus. 2) may prove helpful as it is assumed that this particular area of the shroud's image contains little or no "anamorphic" distortion and is therefore useful as an anatomical constant with which to compare with.



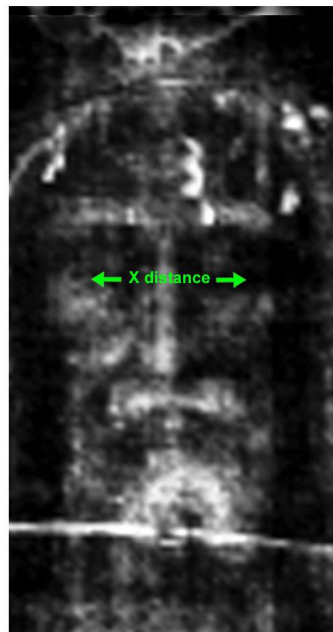
(illus.1)



(illus. 2)



(illus. 1a)



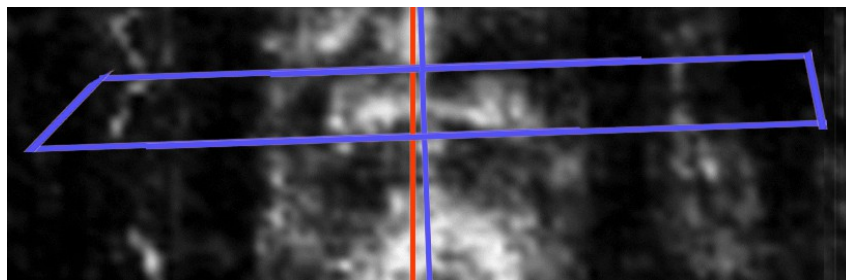
(illus. 1b)



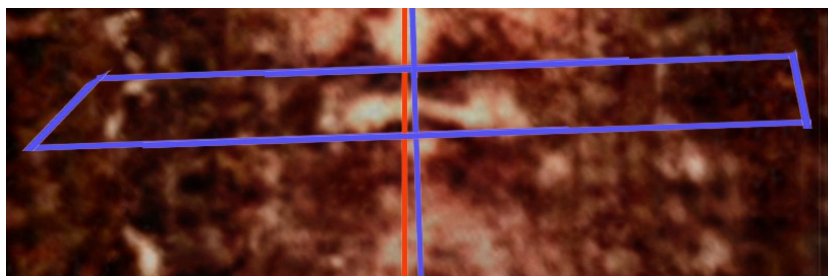
(illus. 1c)

A comparison of the hand area (illus. 1a) with the original photo-negative (illus. 1b) suggests that what appears as the side of the face is really the front of the face. The actual sides of the face are in the area of extreme image drop-off continuing into the area of the hair as shown in the adjusted image (illus. 1c)

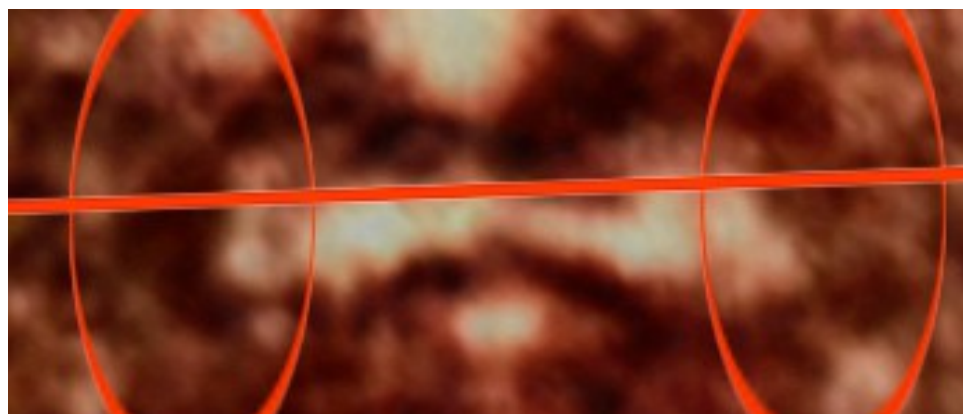
Certain nuances become quite clear in the enhanced version. For example, the head is not perfectly frontal facing but rather slightly tilted downward and to its right. The head appears to be tilted very slightly, approximately 2 degrees to its right side.



The tilt of the head, not easily recognized in the original unadjusted image (above), combined with the other elements of interference, also contributes to both a misunderstanding of the images features and the appearance of distortion. The tilt of the head appears to be present on all three axis x, y and z as shown below.



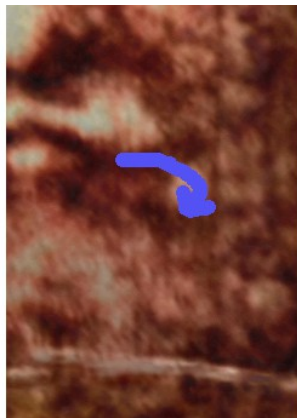
A comparison of the two sides of the area around the mouth and nose reveals the uniqueness of the shapes, each side is distinctly different from the other.



Obvious differences between the third and fourth quadrant beard sections include the distinctly different curl to the extension of the mustache. The curl in the fourth quadrant curls upward and the curl in the third quadrant curls downward.



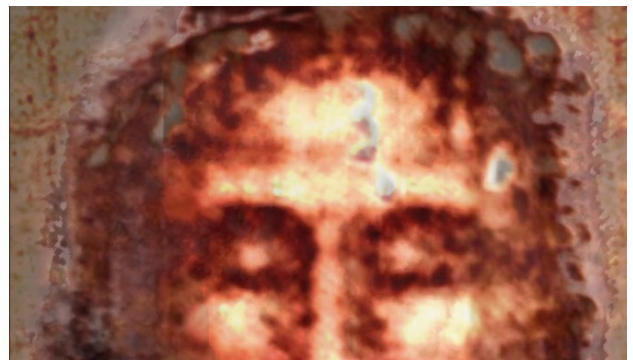
The curl of the moustach in the fourth quadrant curls upward

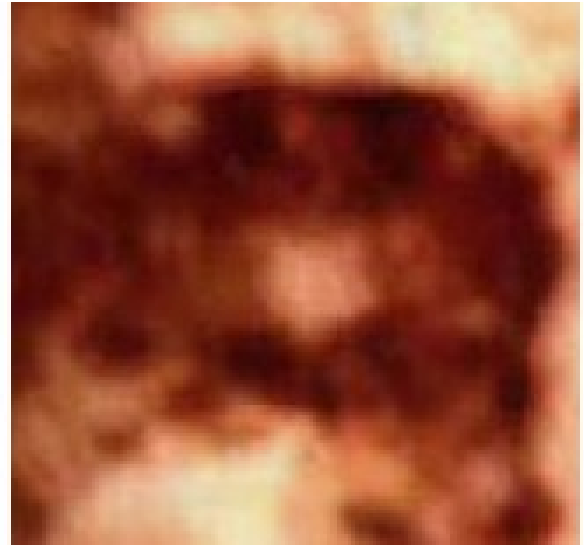
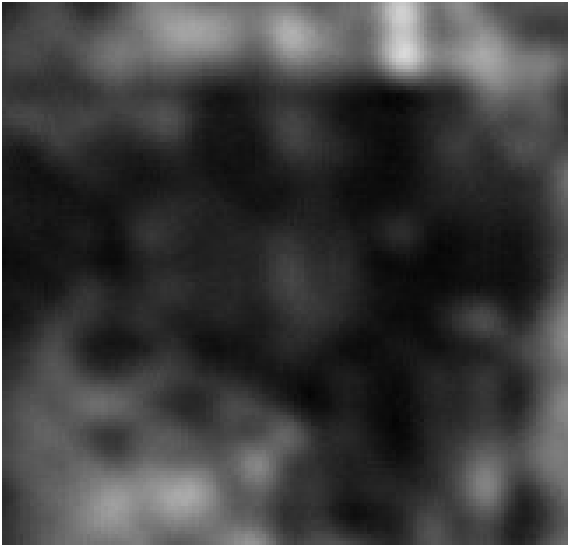


The curl of the moustach in the third quadrant curls downward

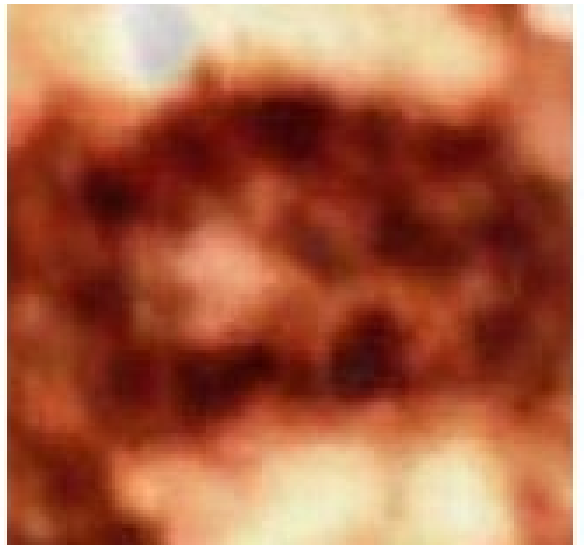


It appears the eyes are almost oriental in the upward slant and shape where the upper and lower eyelids meet, small and in close proximity to one another in proportion to the very broad and well developed cheek bones.





A close-up of the eye in the 1st quadrant. It appears the eyes are almost oriental in the upward slant and shape where the upper and lower eyelids meet, small and in close proximity to one another in proportion to the very broad and well developed cheek bones.



A close-up of the eye in the 2nd quadrant. The same upward slant and shape where the upper and lower eyelids meet, small and in close proximity to one another in proportion to the very broad and well developed cheek bones.



Though the mouth and lips are also small, even delicate, they are set within the frame of a strong jaw area. The right side of the face below the cheek appears to have a deep set "dimple" that coincides with the edge of one of the bands. The beard and the mustache are very full.

Conclusion

There have been many opinions, and theories to support those opinions, about what is actually visibly present on the shroud ranging from coins over the eyes of the figure that would provide an accurate dating of the shroud, to floral patterns of specific botanicals indigenous to regions in Palestine, to seeing inscriptions of ancient biblical texts, and so on. It is understandable why such patterns might be recognized and such conclusions drawn. As mentioned earlier, Pareidolia is a mis-perception where one sees something as clear and distinct when actually it is vague or obscure. This study does not support the above mentioned theories because as the clarification of the visual data progressed, what became increasingly apparent was the image of a human form, concomitant with other visual "noise". The challenge in clarifying the shroud image remained in recognizing the difference between visual "noise" and the actual image data.

Is there a "definitive" likeness of the man of the shroud? This study suggests the answer is yes, with some qualifications. For the most part, the human form that is visible contains a depth of visual data that is far from being unclear or lacking in detail. However, as discussed in chapter 5 on technical challenges, adjustments were made to the luminosity in certain localized areas due to image drop-off of an extreme nature that was separate from the effect of banding. One explanation for these particular areas of image drop-off, may be due to aberrations in the cloth drape during the time of image formation and the effect the aberrations had on image mapping. It is reasonable to assume that any aberration in the cloth drape would result in some degree of anamorphic distortion, however slight, when the image is viewed with the cloth completely flattened out.

Dr. John Jackson and associates have proposed a vertical mapping mechanism* that might somewhat decrease the noticeable effects of anamorphic distortion but would not completely correct the effects nor would it have any influence on the body-cloth distance ratio which would still be affected by an irregular topography of the cloth during image formation. It is the opinion of this study that some degree of anamorphic distortion does exist in the image. Interestingly, the effects of the banding in the region on the sides of the face conspire somewhat to decrease the perception of the anamorphic distortion along the X axis by narrowing the face. But in this case, the narrowing has nothing to do with the actual proportions or essential shapes of the image and for the most part adds to the misperception and misrepresentation of the image. Although the distortion is subtle enough as to go almost undetected, potentially it is an influence in the viewers definition of the likeness.

*The Shroud A Critical Summary of Observations, Data and Hypotheses – Copyright 2013, The Shroud Center of Colorado Robert W. Siefker, M Th, KHS, KC, retired engineer, Daniel S. Spicer, Ph.D, KHS, KC, Professor of physics

A verbal description of the enhanced photo-negative is less effective than viewing the actual image, but certain features stand out as immediately pertinent. The head is not perfectly frontal facing but rather slightly tilted downward and to its right. It appears the eyes are almost oriental in the upward slant and shape where the upper and lower eyelids meet, small and in close proximity to one another in proportion to the very broad and well developed cheek bones. Though the mouth and lips are also small, even delicate, they are set within the frame of a strong jaw area. The right side of the face below the cheek appears to have a deep set "dimple" that coincides with the edge of one of the bands.* The beard and the mustache are very full. The hair is long and definitely not straight. It appears to be made up of small ringlets that collectively create curls, similar to the hair of certain North African Nubian type races.

A comparison of the face on the shroud from the original photo-negative and the adjusted or "enhanced" version reveals some strikingly different qualities in the viewers experience of the two images. The original immediately brings to mind a scene of horrific brutality. There is no serenity there; it is a reminder of suffering and brokenness. In this image, seemingly without expression, the man remains a mystery.

The enhanced version relays a different message. The clarified image of the face on the shroud reveals more specifically a definitive expression on the face, perhaps the most sublime of all the features by comparison, still within the anatomical boundaries that were described above. It is an emblematic expression. The expression is immediately pleasing, even divinely sweet. This is the central jewel as it were, the essential element to the "definitive" likeness, an expression eerily transcendent of what otherwise the blood stained shroud bears witness to. To say that the expression on the face of the shroud speaks volumes is an understatement. It is remarkable that such seemingly random conglomeration of marks and shapes, that in themselves resemble nothing recognizable other than visual noise, when viewing the same marks in their entirety should capture so perfectly this subtle and enigmatic expression!

The expression seems to change depending on how the image is viewed. It can appear radiant one moment and then lovingly serious the next. Objectively speaking, this is because our eyes sometimes send mixed signals to the brain. For example, certain qualities to the overall countenance are more apparent in peripheral vision than dead-center vision. It is well known that different cells in the eye are designed to pick up different colors, contrasts, backgrounds and foregrounds. Some deal with central vision while others with peripheral. Depending on what part of ones vision (peripheral or dead-center) picks up the image first, the brains interpretation of an objects size, clarity, brightness and location in the visual field is affected.

From a subjective standpoint, the experience of the countenance is naturally tailored to the individual viewer by way of their existing filters at the time. Sometimes one interpretation wins over the other, and the expression is one way, sometimes others take over and the expression another way. Exactly what the expression does convey to the individual is somewhat like a secret world whose nature is unexpected, profound, and fantastic, all at once.

What are the artistic implications of a definitive likeness? The shroud has been referred to as a “fifth gospel” in that it bears an authoritative testimony to the reality of Jesus Christ, his life, his death and his resurrection. The face on the shroud image goes into even greater detail concerning the man himself as both the anatomy and expression are not arbitrary. Here is much more than an ambiguous facial similitude. Because of the depth of detail the likeness bears an expression that clearly provides its own inherent commentary on the recorded accounts of Christ. Most artistic portrayals of Jesus are radically subjective. The image as provided by the shroud is not so. As demonstrated by this study, the image on the shroud is very specific and in this respect Jesus is not historically alien to us in appearance and attitude.

Christ said of himself in relation to God: "He who has seen me, has seen the Father". The mission of the shroud is to be the transparence of Christ and of his face. To see the face of Christ is to gain understanding about the profound relationship between the human and divine natures. The accurately enhanced image from the shroud reveals a clear vision of this relationship in remarkable anatomical detail, even to the detail of a specific facial expression; an expression of equipoise and peace.



* (John Paul II, Apostolic Letter *Novo Millennio ineunte* 6 January 2001).

Roger W. Basset first became interested in the shroud in 1978 while graduating from the Royal Academy of Arts in London, England. The computer maps he created are the result of over 38 years of studying the shroud. His hope is that others will benefit from the work he has done in clarifying the shroud image, both the layman and those involved in the visual arts interested in the portrayal of Christ.