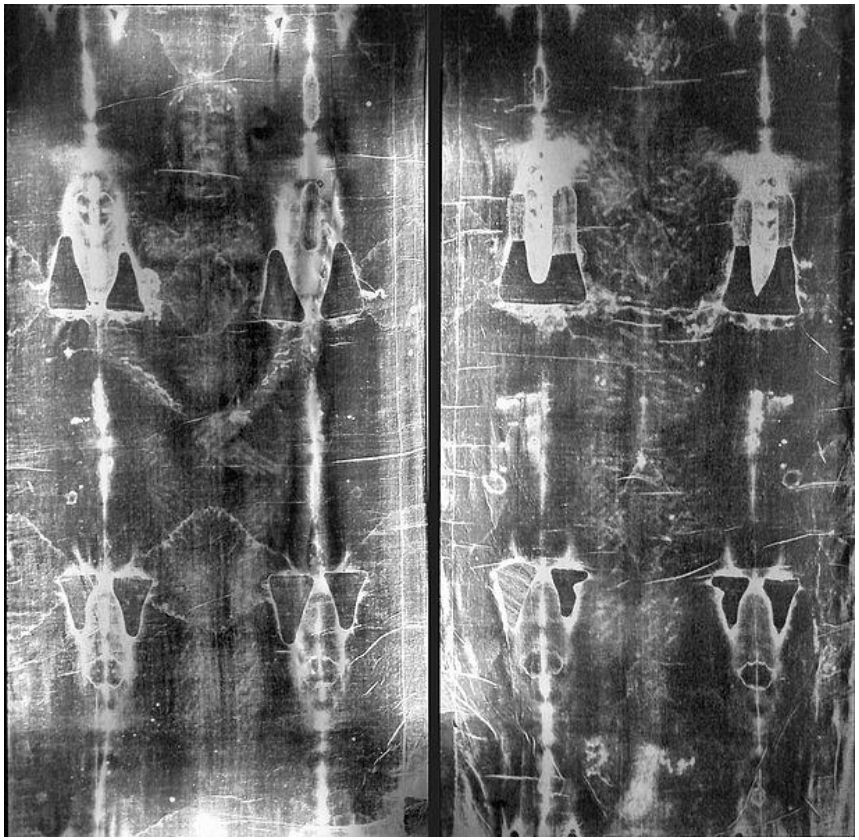
Shroud of Turin & Manoppello Image Comparison &3D analysis

Or the magic of ImageJ

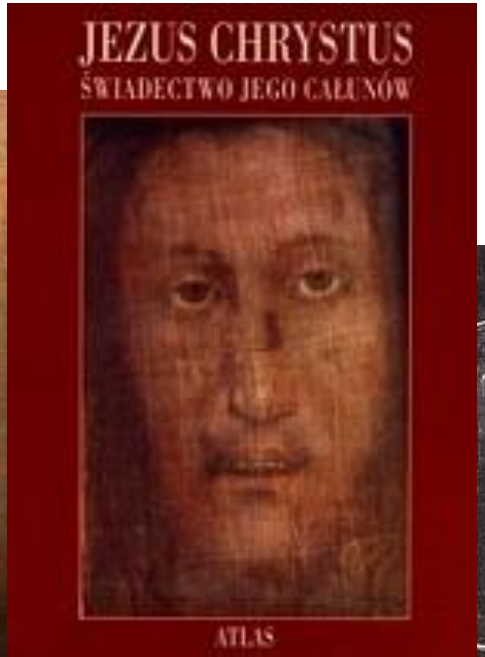
By O.K.

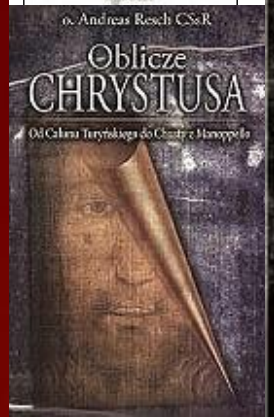
There are currently two images of Christ which are widely considered *acheiropoieta,* that is ‘not made by human hand.’

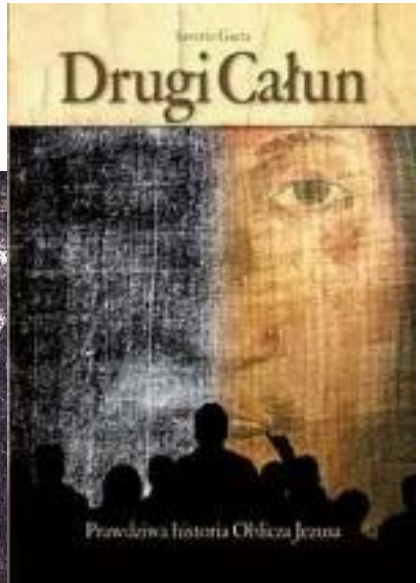
1. The first one is well known Shroud of Turin.
2. The other image that is suggested by some to be miraculous, is the Image of Manopello, suggested by some (especially Father Heinrich Pfeiffer) to be the original Veil of Veronica.



The relations between the two objects are complex and controversial, and I don't want to discuss them fully in this paper. Virtually unknown in the English world (in large part thanks to the authority of Ian Wilson, who dismissed it in his 1991 *Holy Faces Secret Places*, for several reasons I also will not discuss in this paper) until recent, the Veil enjoys great popularity in Poland (overshadowing Sudarium of Oviedo for example), where several popular publications by both foreing (Badde, Gaeta, Resch, Paschalis-Schlömer) and indigenous (Treppa) authors were published.







For some further information in English about the Image of Manoppello, I recommend checking those links:

- Official site of the Holy Face Sanctuary
- Sudarium Christi Website
- Holy Face of Manoppello Blog
- *Volto Santo di Manoppello, the Holy Face* by Juliusz Maszloch
- Several articles from 2010 ENEA Frascati Conference
- John Iannone, The Veil of Veronica: Fact or Fiction?

For more sceptical view, see Roberto Falcinelli's The Veil of Manoppello: Work of Art or Authentic Relic? from the 3rd International Dallas Conference on the Shroud of Turin (2005).

It has been claimed that the face on the Manoppello Image correspond with the face on the Shroud. This was first suggested by sister Blandine Paschalis-Schlömer (her conclusions were documented in a beatiful atlas of high quality photographs, published in Poland under the title *Jezus Chrystus: Świadectwo Jego Całunów*, Polwen 2009 - cover on the slide 3), and later studied by Andreas Resch (here is his paper from 2010 ENEA conference).

For several years, I treated this as an established fact. However, more recently I had some doubts about the validity and significance of the match of the two images.

Especially when I discovered that some presented superpositions mixed left and right sides on both clothes!

To see what I mean, compare the diagram from Resch paper (below), with the illustration from Krzysztof Tarnowski's book *Całun Turyński: Relikwia czy genialne fałszerstwo?* (Instytut Wydawniczy PAX 2011, next slide). Both claim perfect congruence!

Figure 4. Photonegative of the face of the Shroud with sketch.

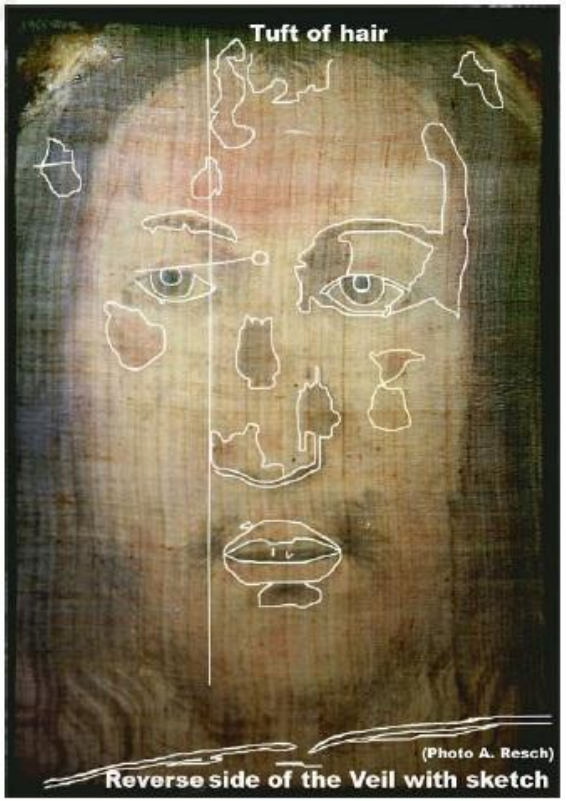
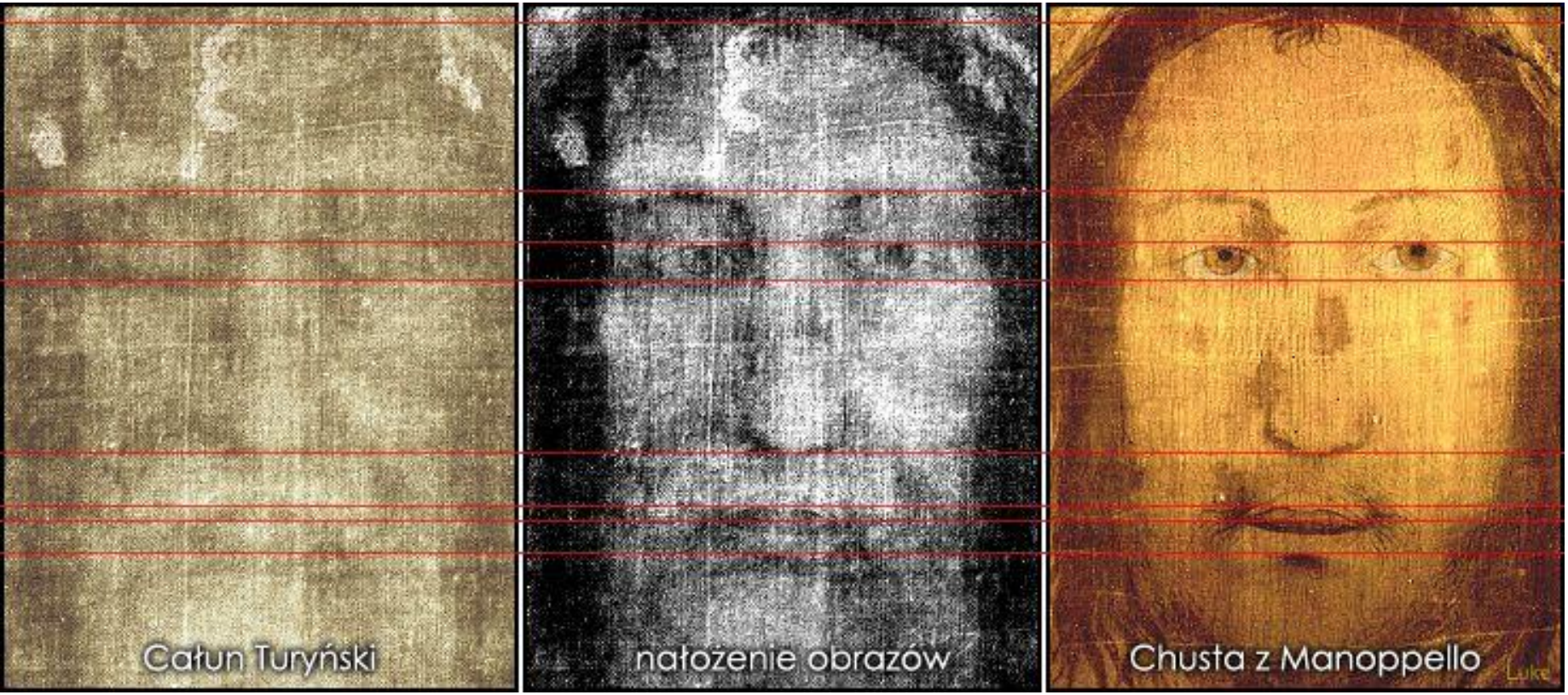


Figure 6. Reverse side of the Veil with sketch.



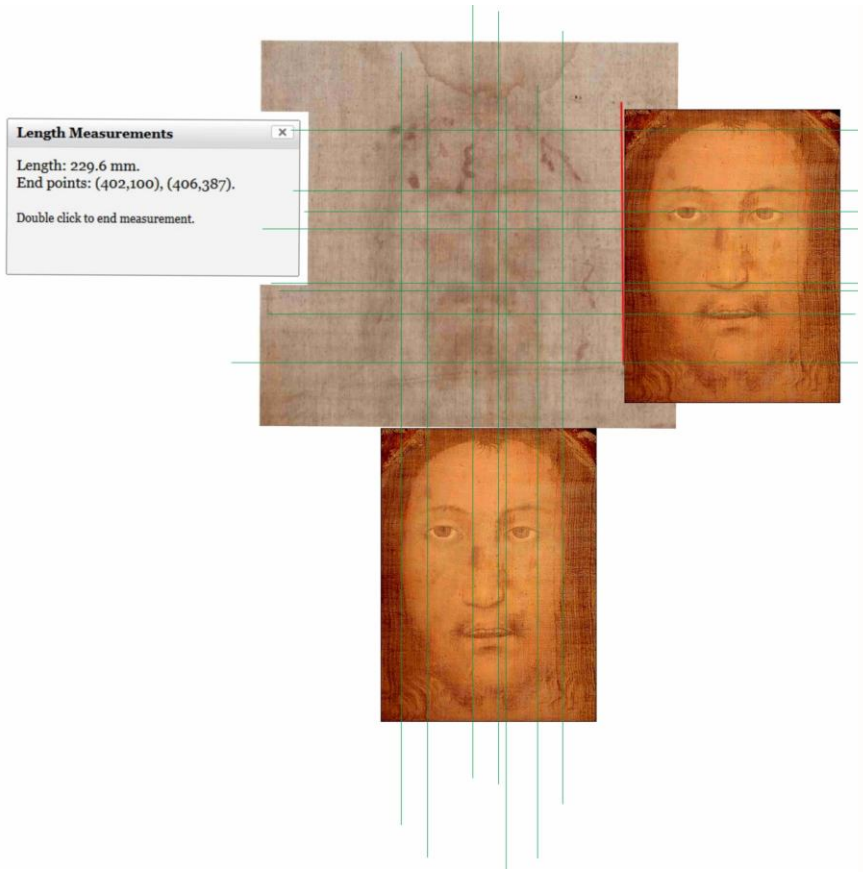
(pay attention to the orientation of epsilon-3 blood mark on the Shroud, and blood fleck on the side of Manoppello's nose)

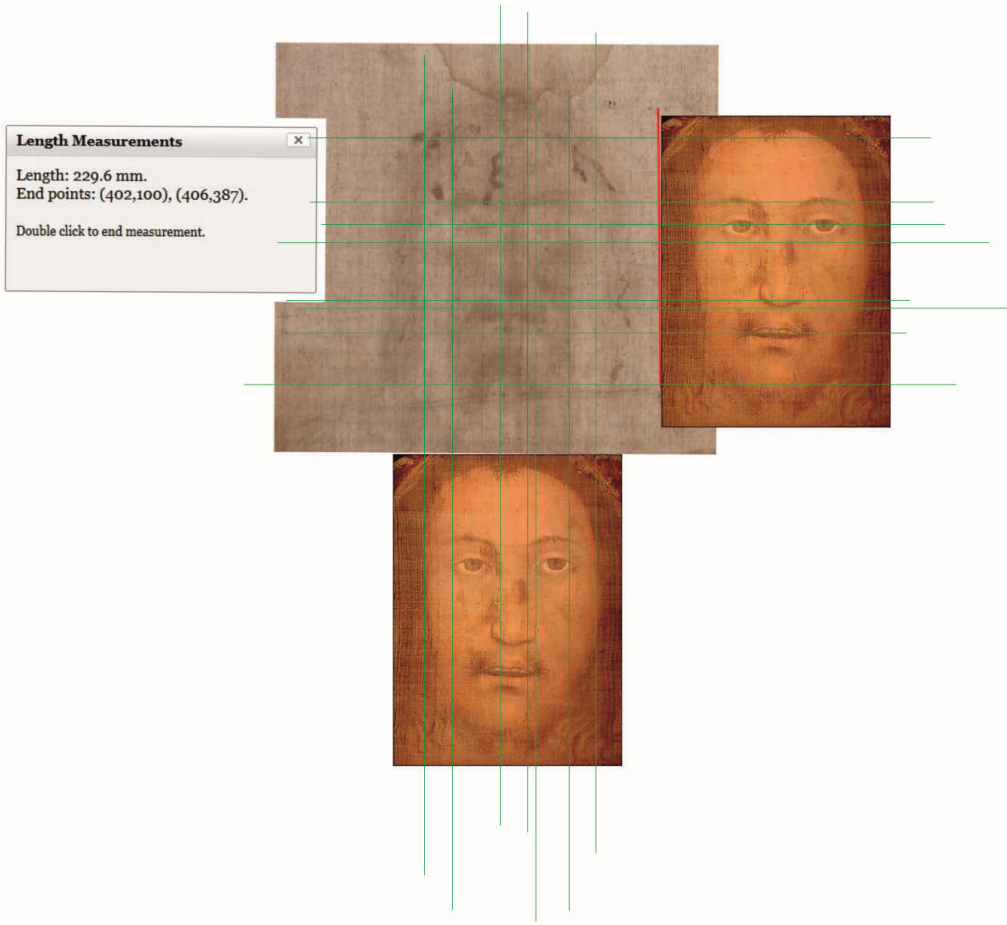
So I decided to take the matter into my hands, and perform at least basic verification of those claims –for both variants.

I had to remember following things:

- The natures of the Shroud and Manoppello images are completely different. The Shroud is a monochromatic image of deceased person. The Manoppello instead is a color image of a living (some claim resurrected) man –thus the features presented may be slightly different (closed vs open eyes, small differences in the mimic of the face, lack of bloodmarks on the Manoppello etc.)
- Both fabrics may have their dimensions slightly different than when they supposedly covered the face of Jesus in the tomb, due to stretching, folding, rolling and so on during their history.
- The Manopello Veil dimensions: circa 24x17 cm. The corresponding Shroud area must have similar dimensions.

Here are results, using 2002 Durante Shroud photo. Note: I used simply obverse side of the Manoppello, which I mirrored manually. We know that there are slight differences between obverse and reverse side of that cloth.





Generally, although the comparison is coarse, we can say that basic proportions are to some degree congruent in both cases.

At first glance the Manoppello face looks a little bit wider than the Shroud face, on the latter hair being separated from cheeks. This however may be just the effect of banding patterns on the Shroud linen (see picture on the right), or perhaps there is some other explanation of it (chin-band? strips of papyri with writings, as suggested by Barbara Frale?).

For now, I leave aside assesment of how good and significant is this match between Shroud and Manoppello faces.

Variegated Patterns

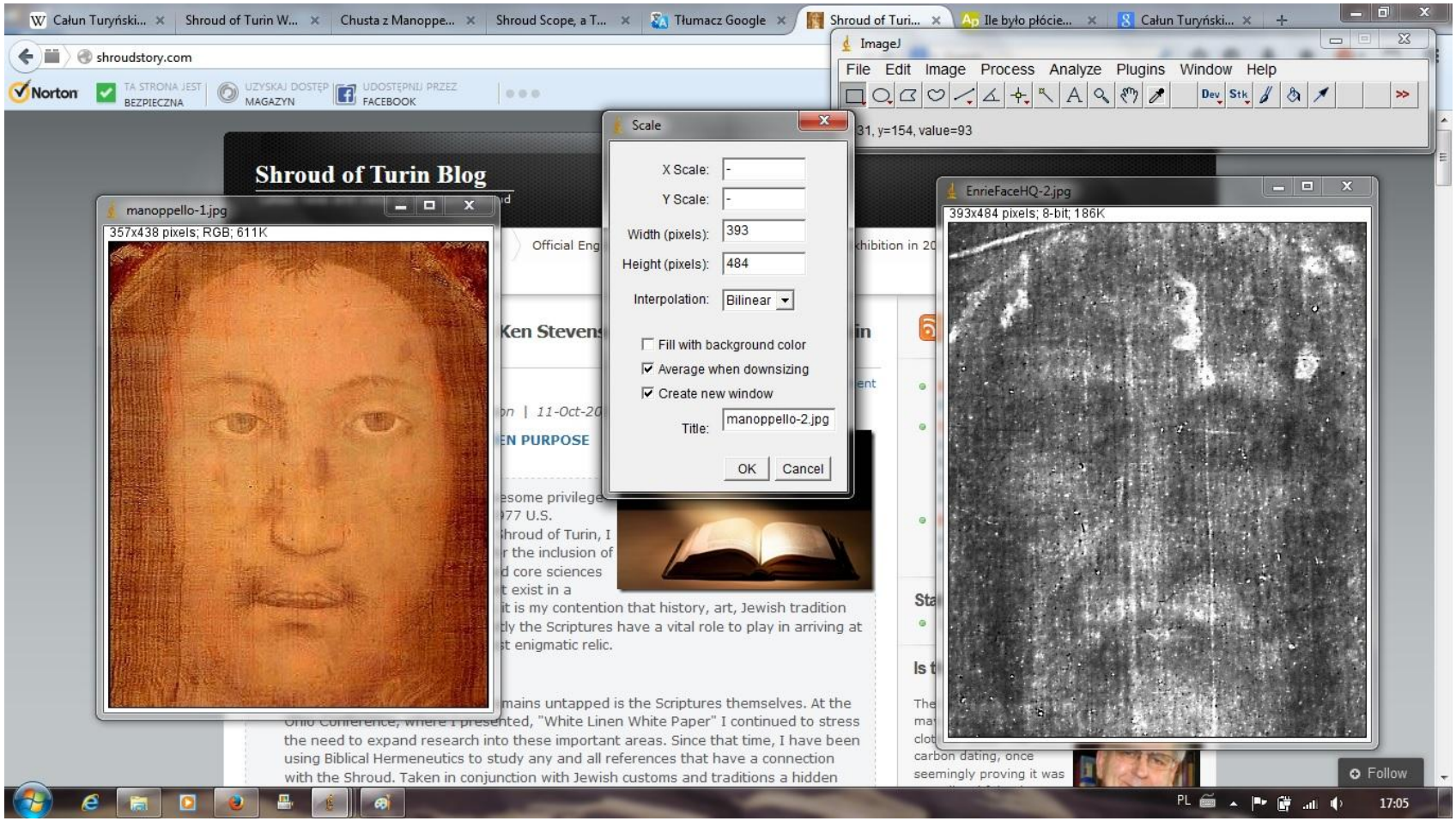
Normal photograph of the face

Filtered photograph of the face

Now finally the time to run ImageJ!

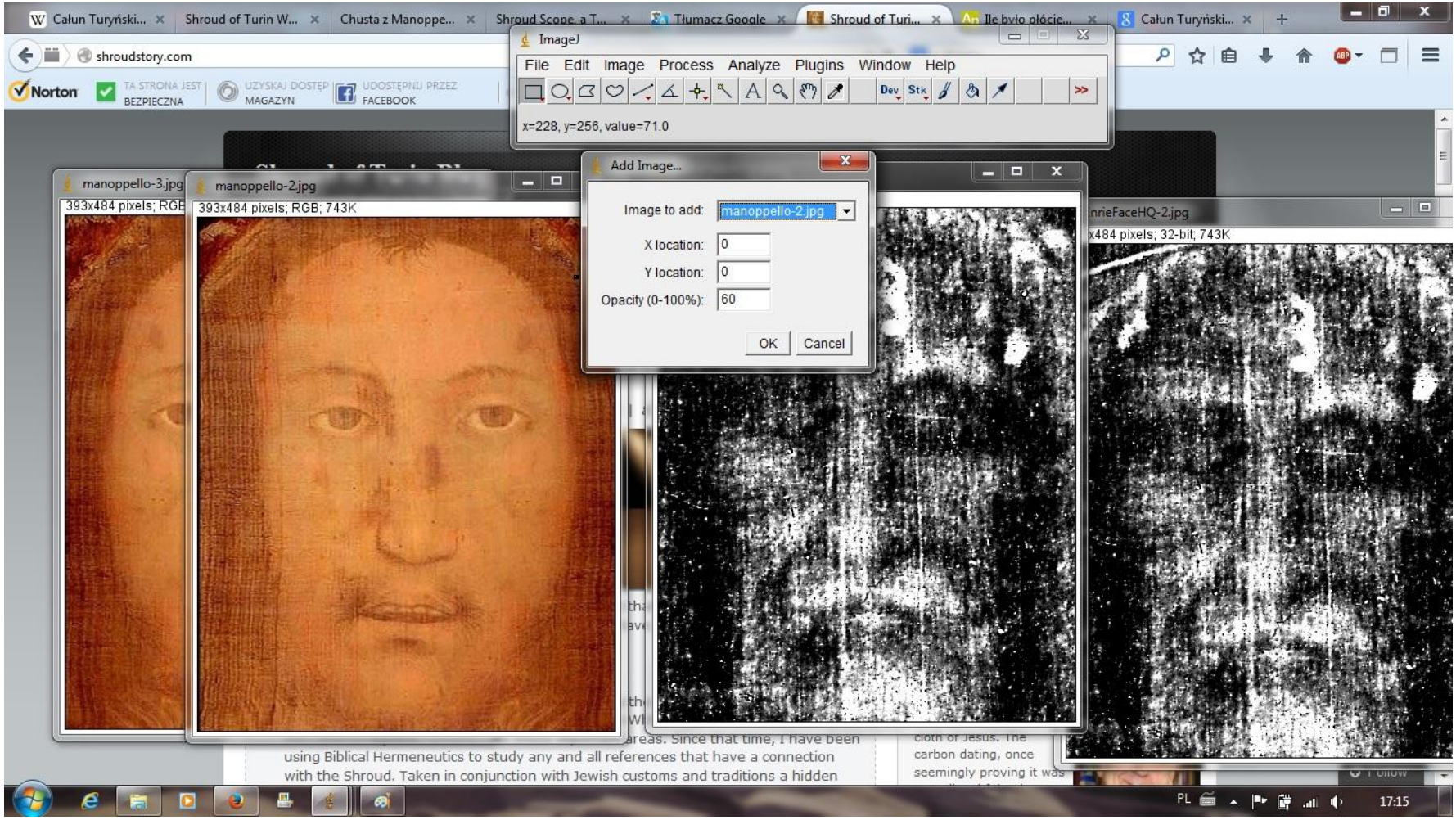
Note: if you notice temporal inconsistencies on those slides in those images, don't ring alarm, simply they were not presented in the same chronological order as I made them. If you notice them without reading this note, you are really good!

First, let's make some superpositions of Manoppello and the Shroud. I prepared Enrie negative of approximately the proper side from ShroudScope. The problem is that the picture of Manoppello has slightly smaller pixel size. So let's rescale it using Image>Scale option:

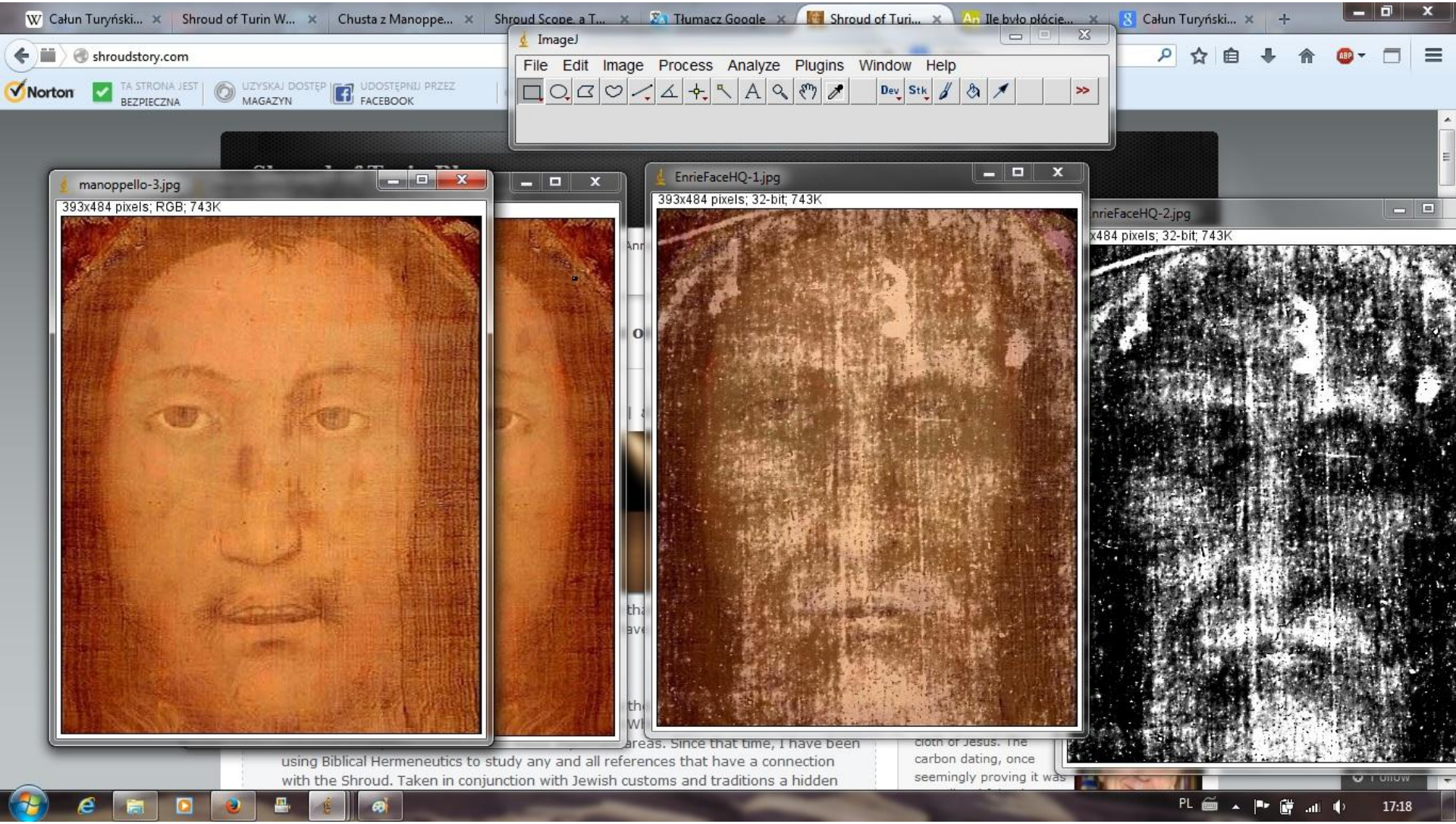


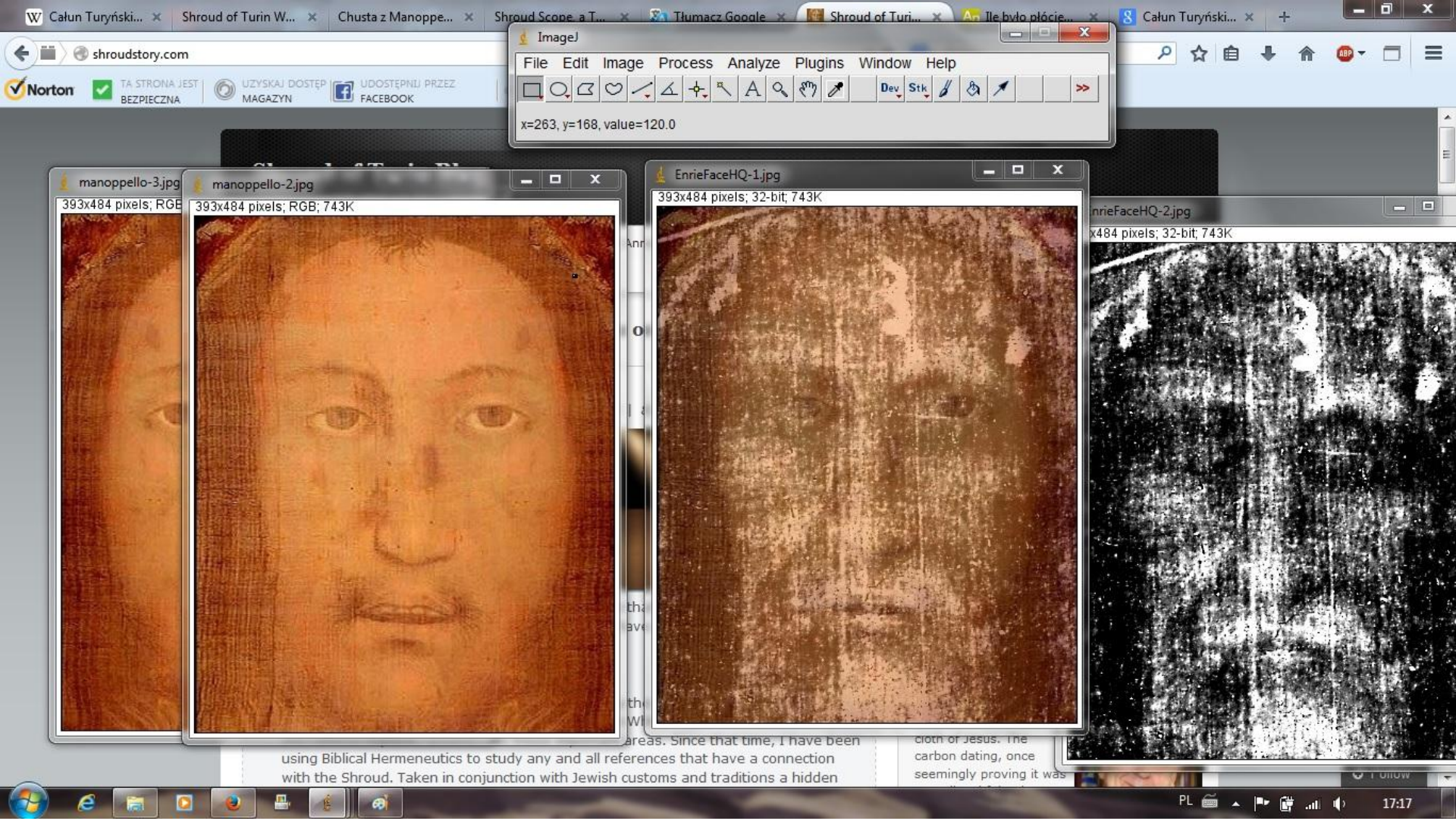
Now (after duplicating both images, flipping one of the Manoppellos by Image>Trnasform>Flip Horizontally, and of course adjusting brightness&contrast of Shroud picture):

Image>Overlay>Add Image



Let’s see some results:





The match is not perfect yet, as this was just an exercise. For serious research, one should be much more careful in choosing the proper size and location for the Shroud frame (and perhaps experiment alittle bit with slight rotation of one of the images)

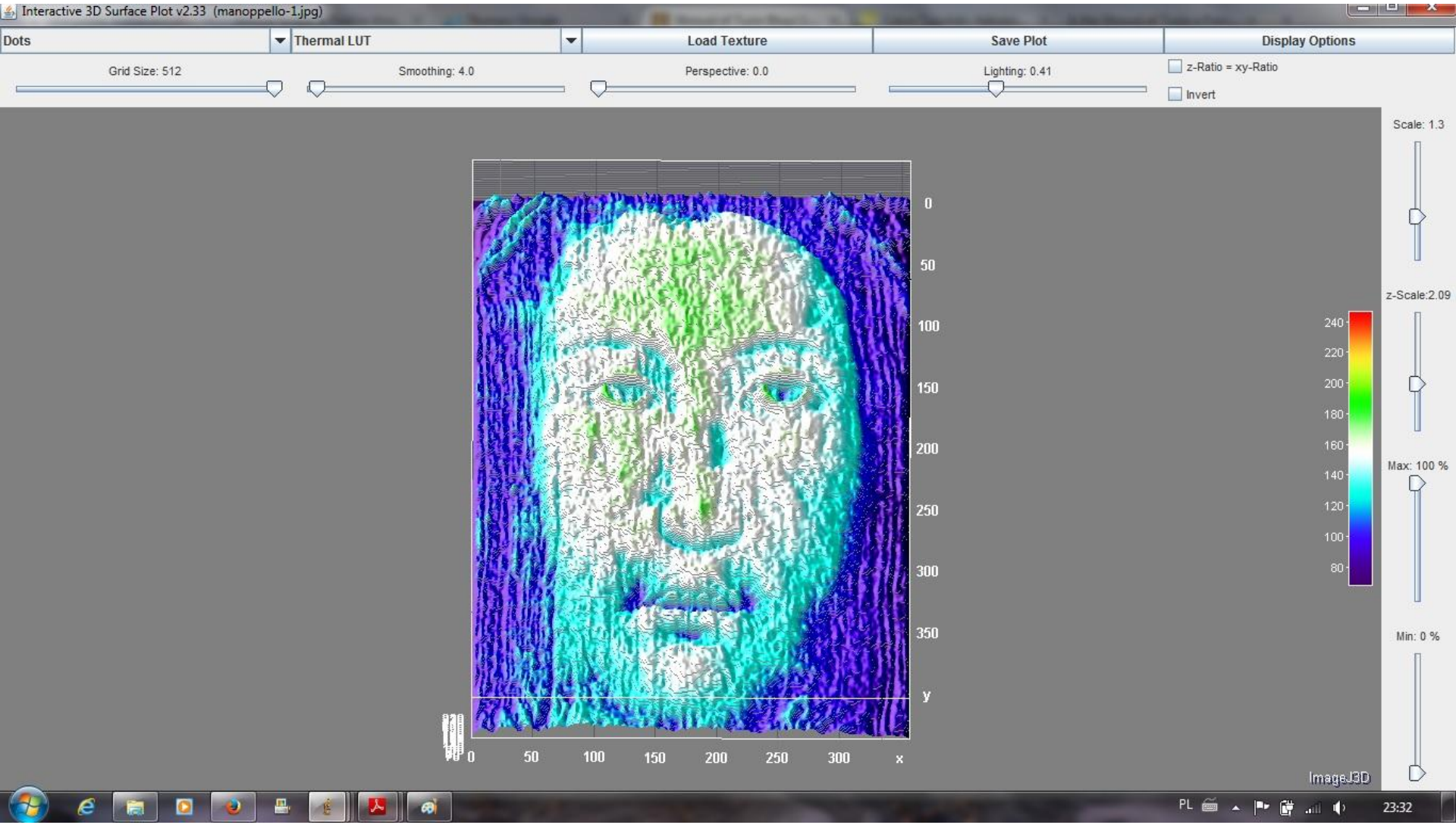
3D Analysis

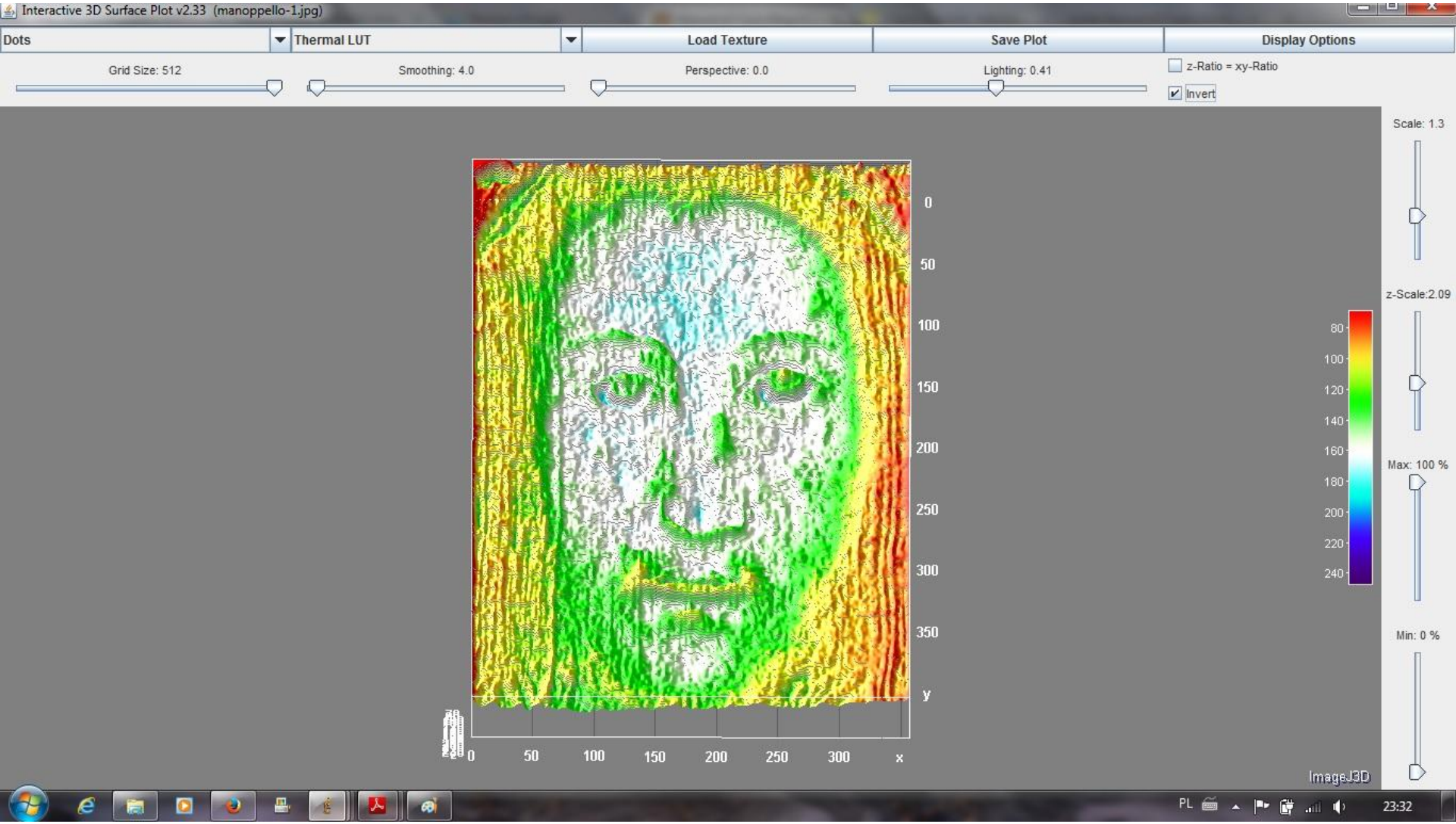
The 3D properties of the Shroud of Turin are well known, the correlation between intensity and the body-cloth distance etc. Fine, but what about the Manoppello Image?

In a paper 3-D Processing to Evidence Characteristics Represented in Manoppello Veil , Jan Jaworski and Giulio Fanti analise 3D properties of Manoppello Veil. They write in conclusions: *The image processing confirms in general the weak 3-D characteristics of the Veil's image, but also evidences some 3-D characteristics of some details such as the hair lock on the forehead. However, some 3-D features of the Veil's image are related to its hidden negative character.*

It is important however to stress out that alleged 3D properties of Manoppello **have nothing in common** with this unique Shroud feature. The 3D properties of the Manoppello have more resmeblance to the similar effects on some paintings or photographs, simply due to nature of this image. There is no intensity-distance correlation, just some shadowing in concave ares like eyeholes and sides of the nostril. Jaworski& Fanti simply used 3D analysis as a tool for looking further congruences between two cloths.

To show it, let’s make some 3D reconstructions of Manoppello face, bot h in positve view, and pseudo-negative (using invert option)




Interactive 3D Surface Plot v2.33 (manoppello-1.jpg)
Dots
Thermal LUT
Load Texture
Save Plot
Display Options
Grid Size: 512
Smoothing: 4.0
Perspective: 0.0
Lighting: 0.41
z-Ratio = xy-Ratio
Invert
Scale: 1.3
z-Scale:2.09
Max: 100 %
Min: 0 %
0
50
100
150
200
250
300
350
y
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50
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x
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120
140
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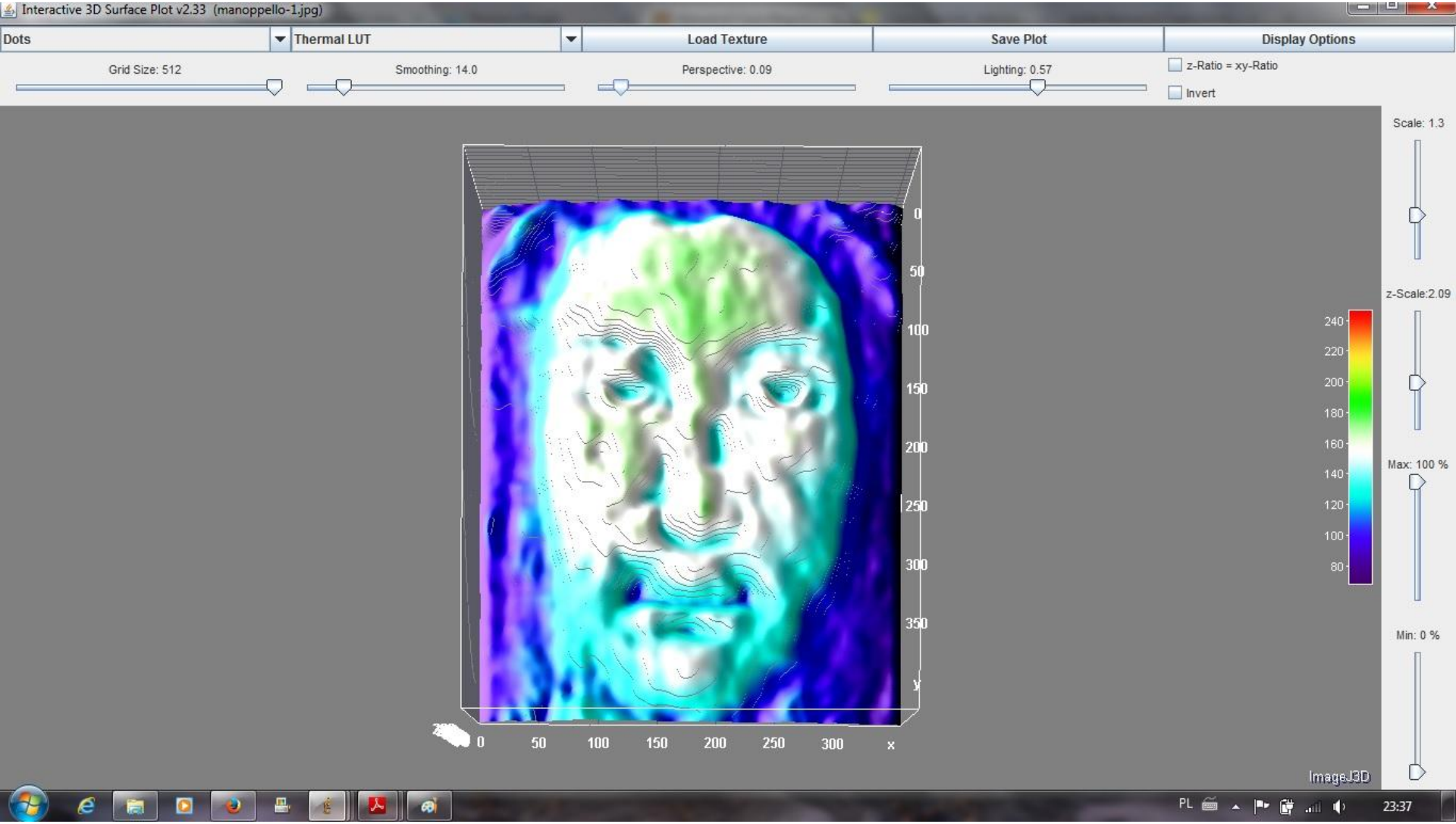
220
240
ImageJ3D
PL
23:32


Interactive 3D Surface Plot v2.33 (manoppello-1.jpg)
Dots
Thermal LUT
Load Texture
Save Plot
Display Options
Grid Size: 512
Smoothing: 14.0
Perspective: 0.09
Lighting: 0.57
z-Ratio = xy-Ratio
Invert
Scale: 1.3
z-Scale:2.09
Max: 100 %
Min: 0 %
240
220
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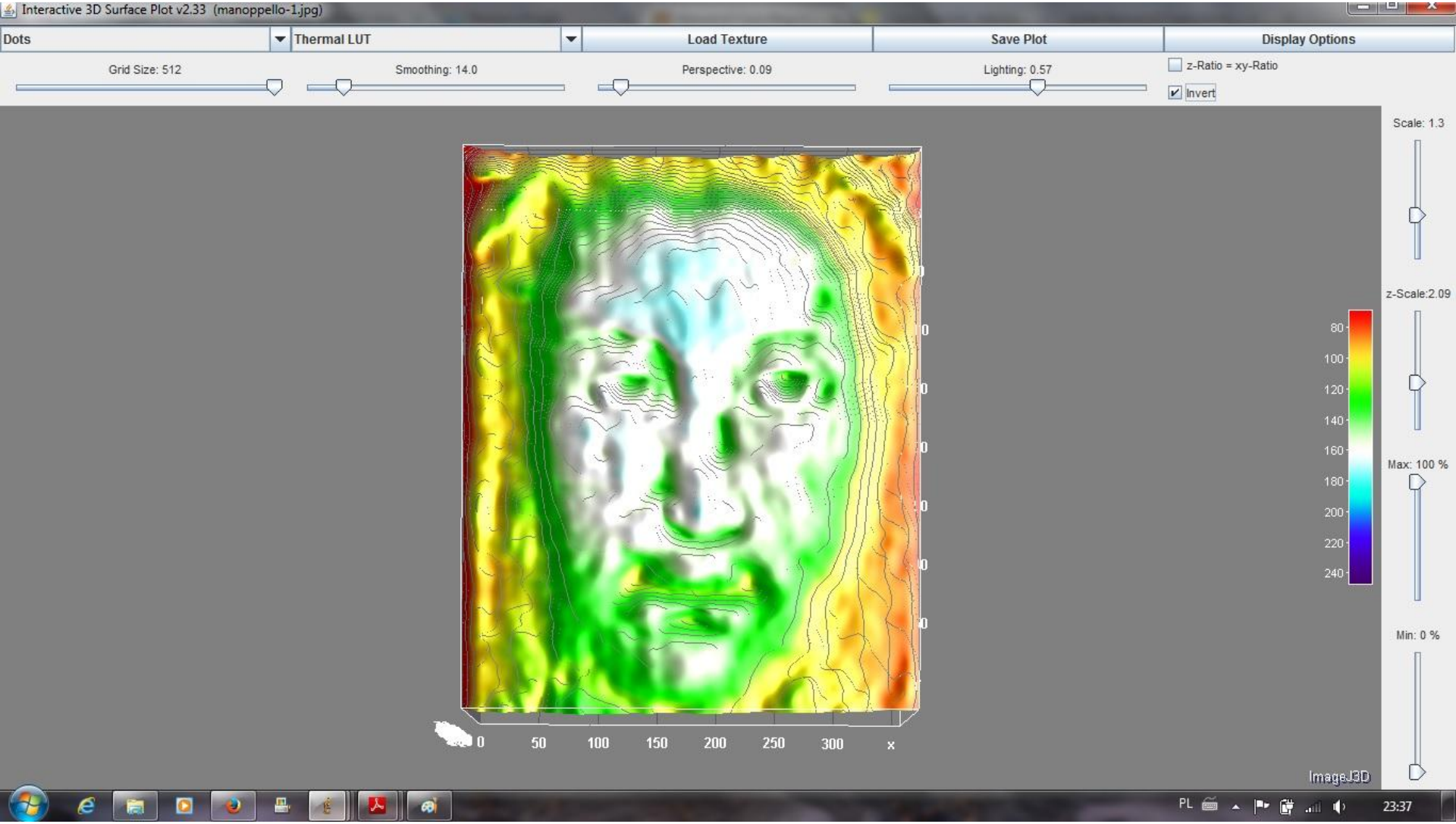
ImageJ3D
PL
23:37


Interactive 3D Surface Plot v2.33 (manoppello-1.jpg)
Dots
Thermal LUT
Load Texture
Save Plot
Display Options
Grid Size: 512
Smoothing: 14.0
Perspective: 0.09
Lighting: 0.57
z-Ratio = xy-Ratio
Invert
Scale: 1.3
z-Scale:2.09
Max: 100 %
Min: 0 %
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220
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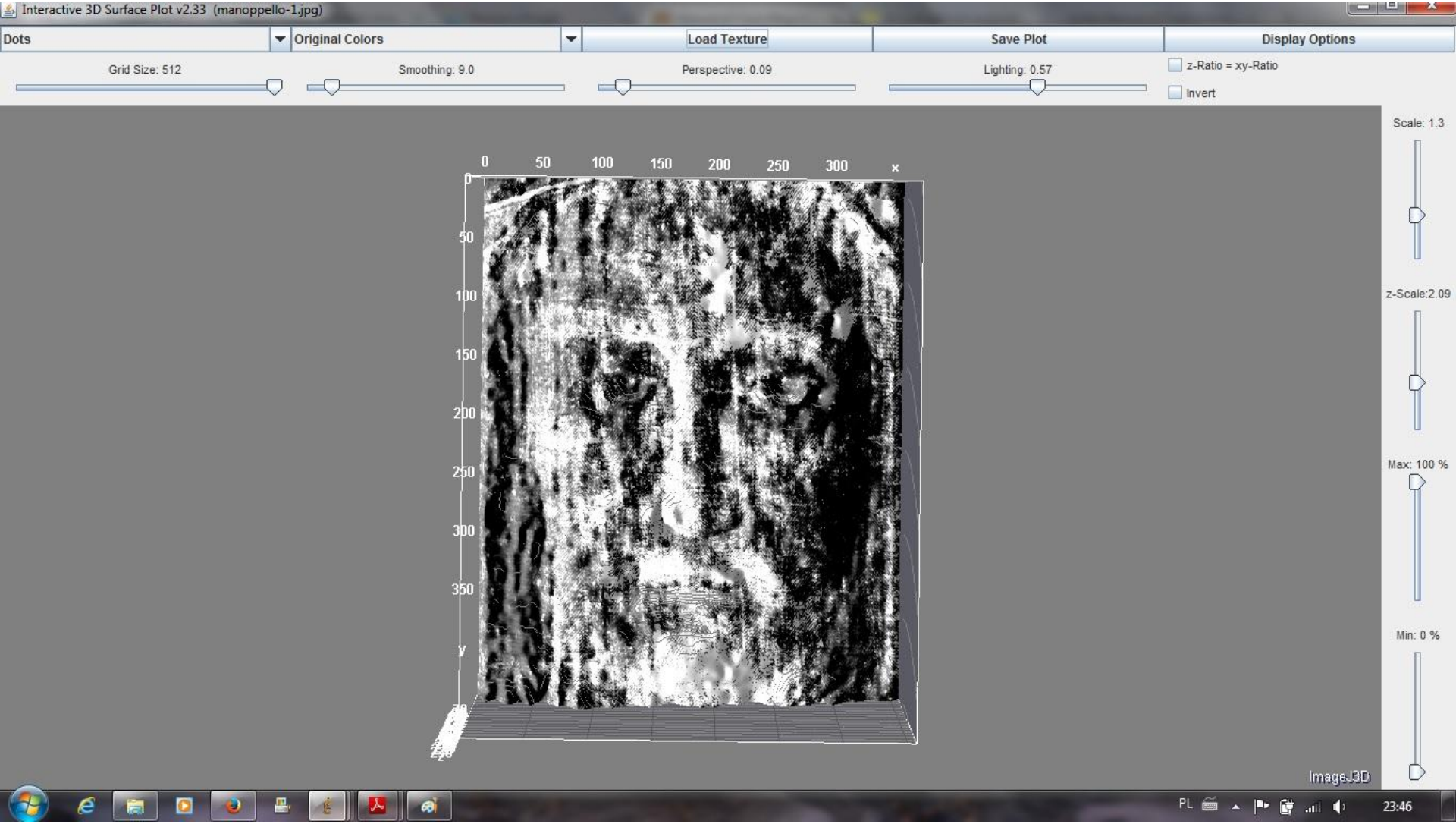
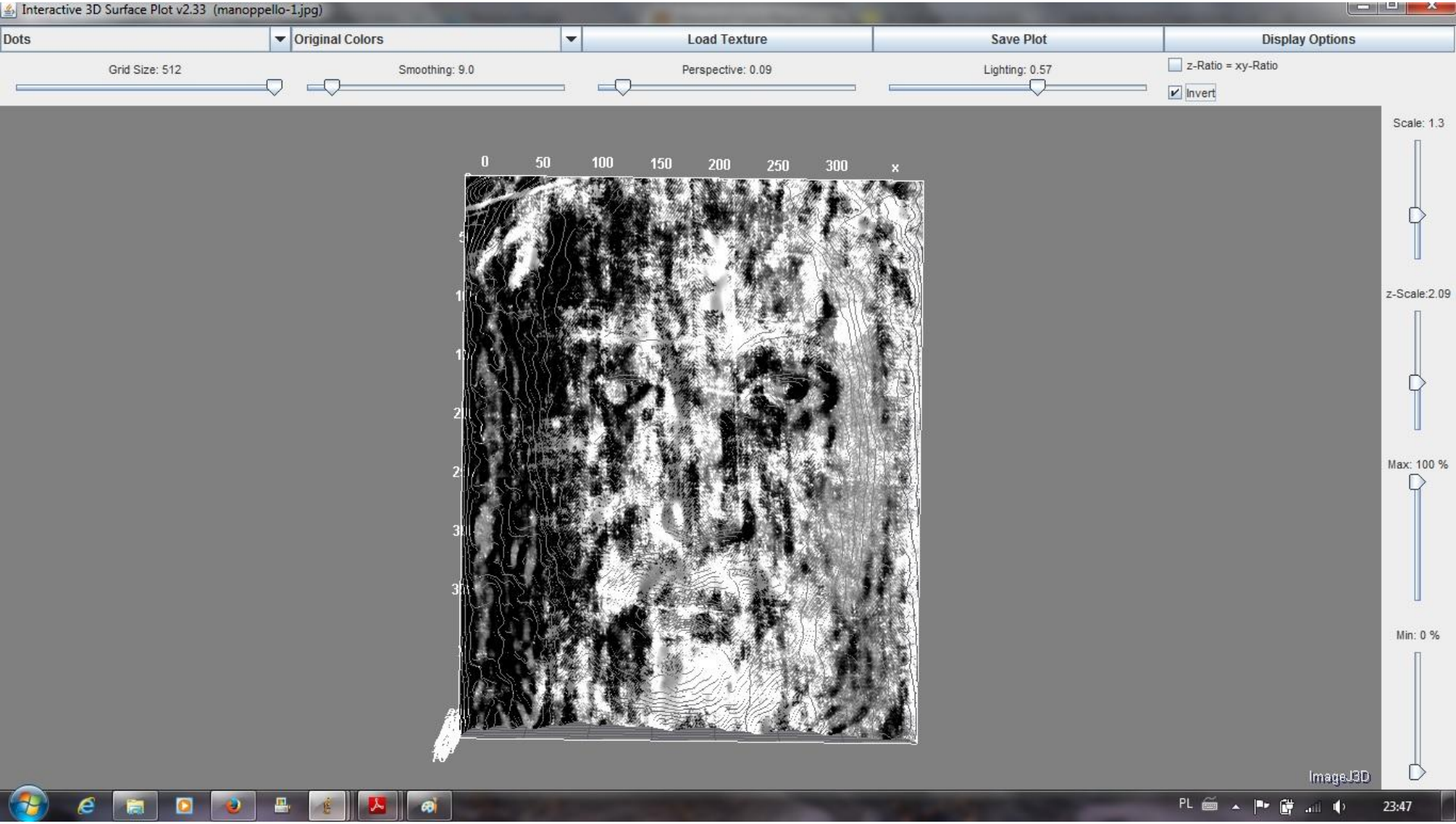
x
ImageJ3D
PL
23:37

Let’s overlay Shroud face over it (I will show further how to make it).




Interactive 3D Surface Plot v2.33 (manoppello-1.jpg)
Dots
Original Colors
Load Texture
Save Plot
Display Options
Grid Size: 512
Smoothing: 9.0
Perspective: 0.09
Lighting: 0.57
z-Ratio = xy-Ratio
Invert
Scale: 1.3
z-Scale:2.09
Max: 100 %
Min: 0 %
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100
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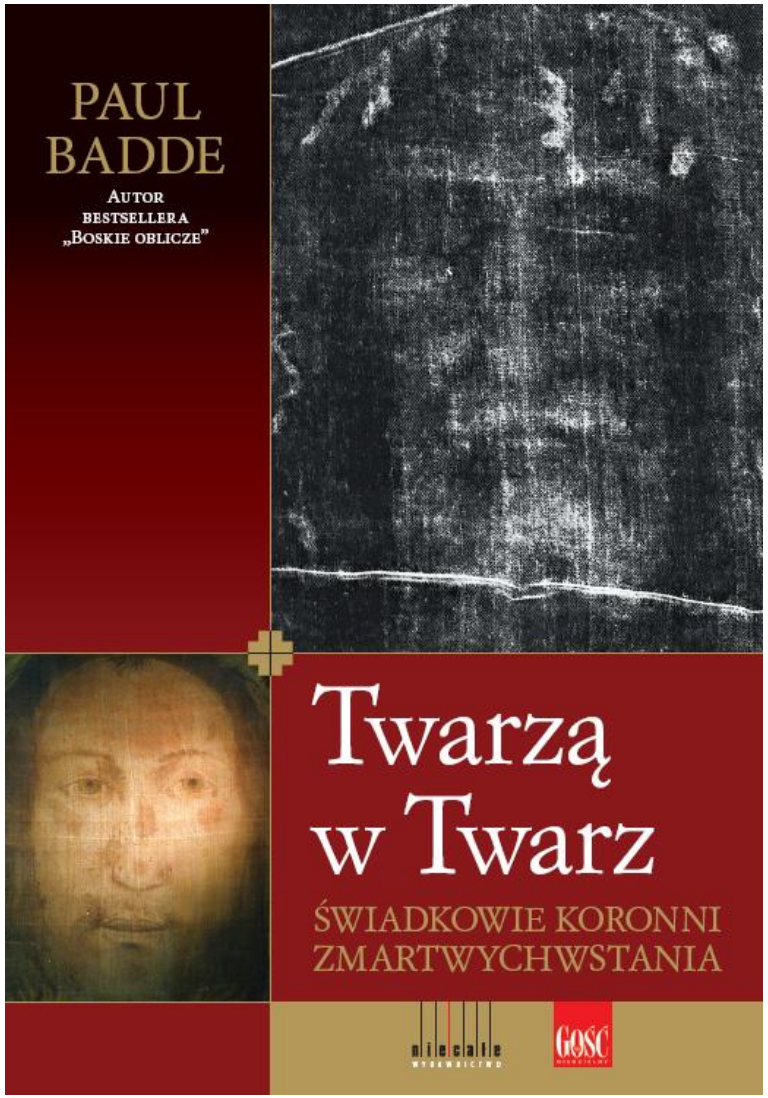
200
250
300
x
ImageJ3D
PL
23:47

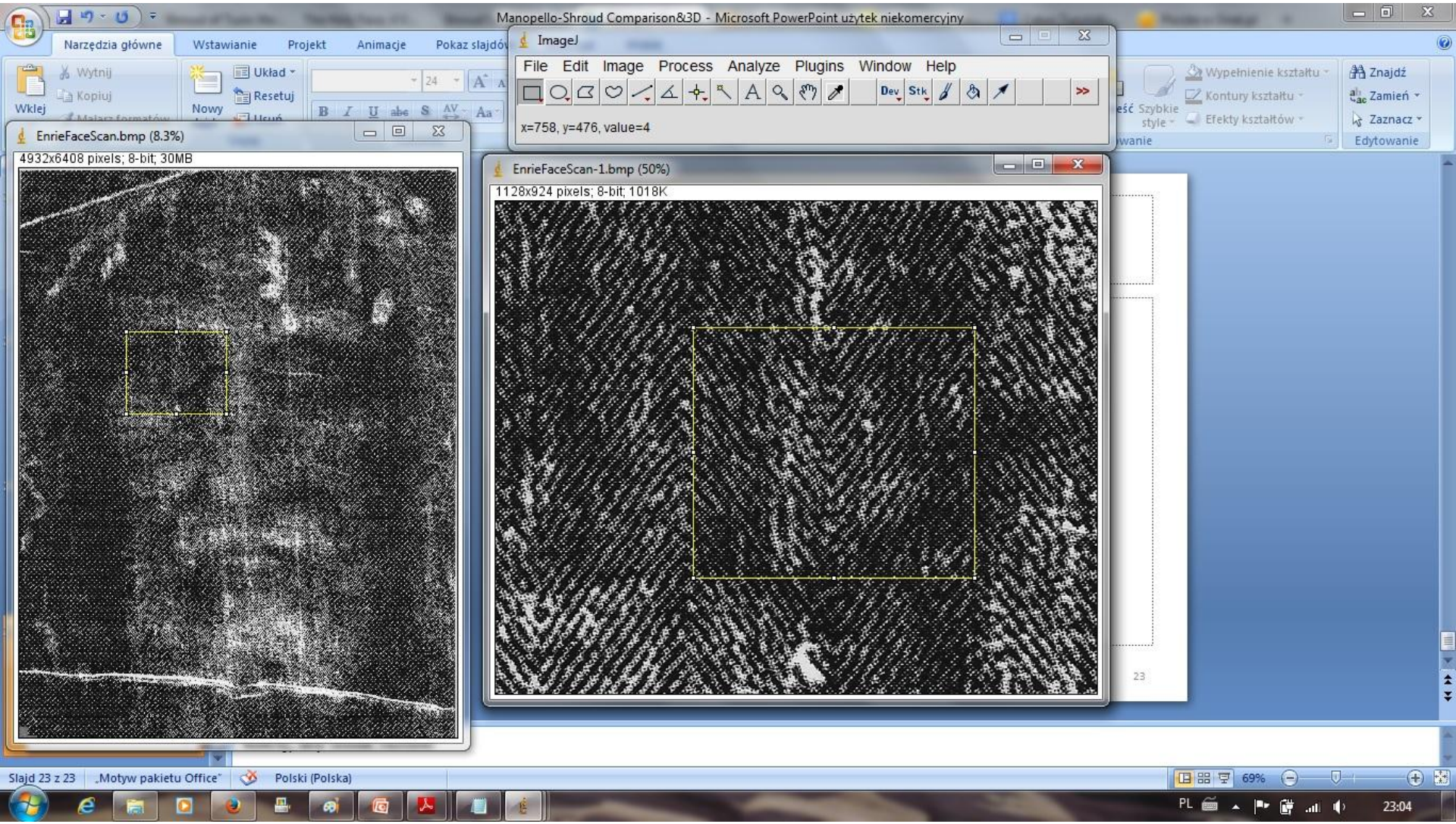
Now let's return to the Shroud.

The Paul Badde's latest book is a real treasure. The text is indeed interesting, and so are the unique photographs inside (including picture of the banner from the Savoy' s Lepanto 1571 flagship), but the most precious thing is **the cover**. Where else could have I found such excellent reproduction of the Enrie's face, scanned easily at 1200 DPI (max of my scanner, I suppose that even 2000 DPI may be achievable)?

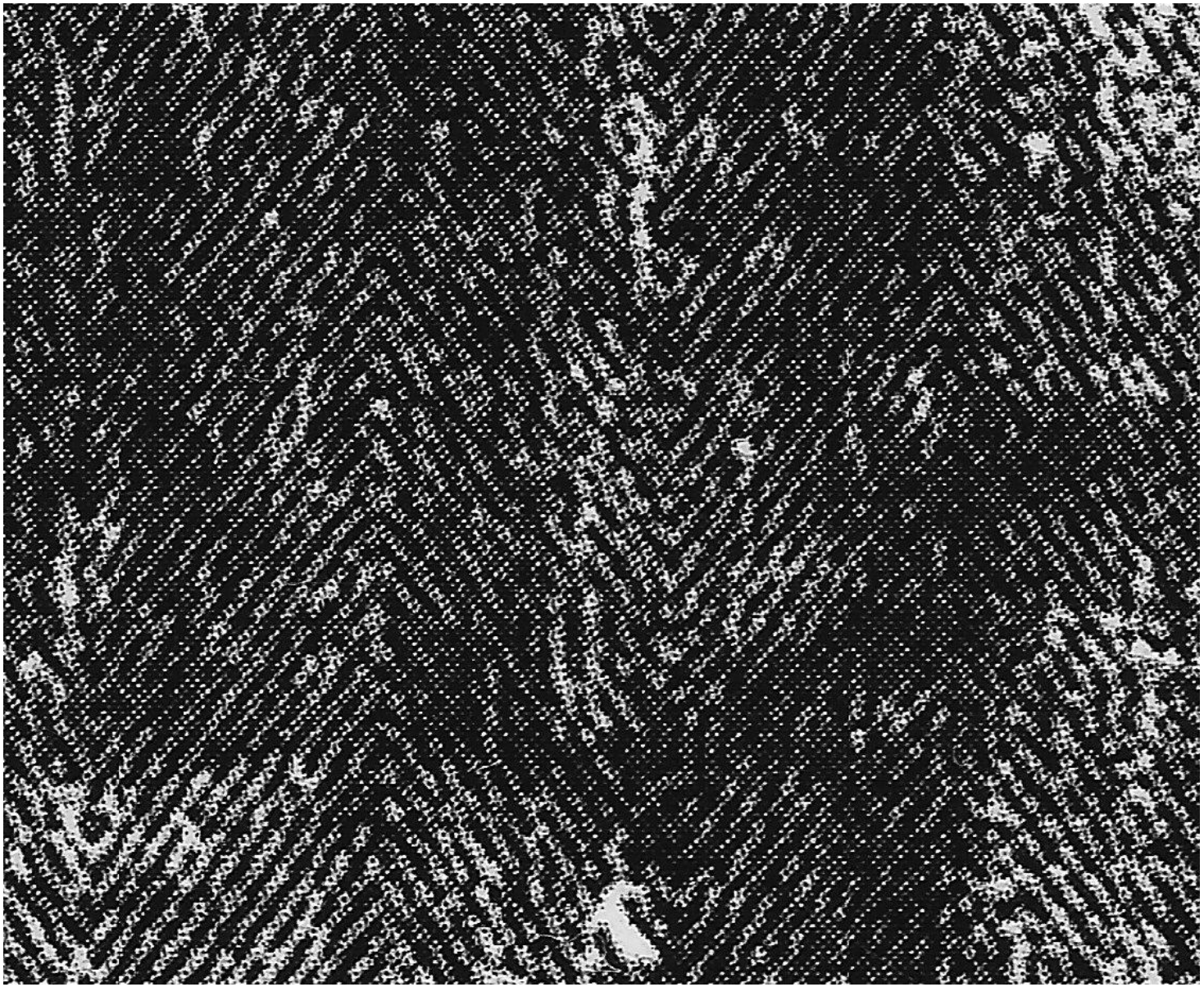
Price of the book: 30.00 PLN (below 10 USD).

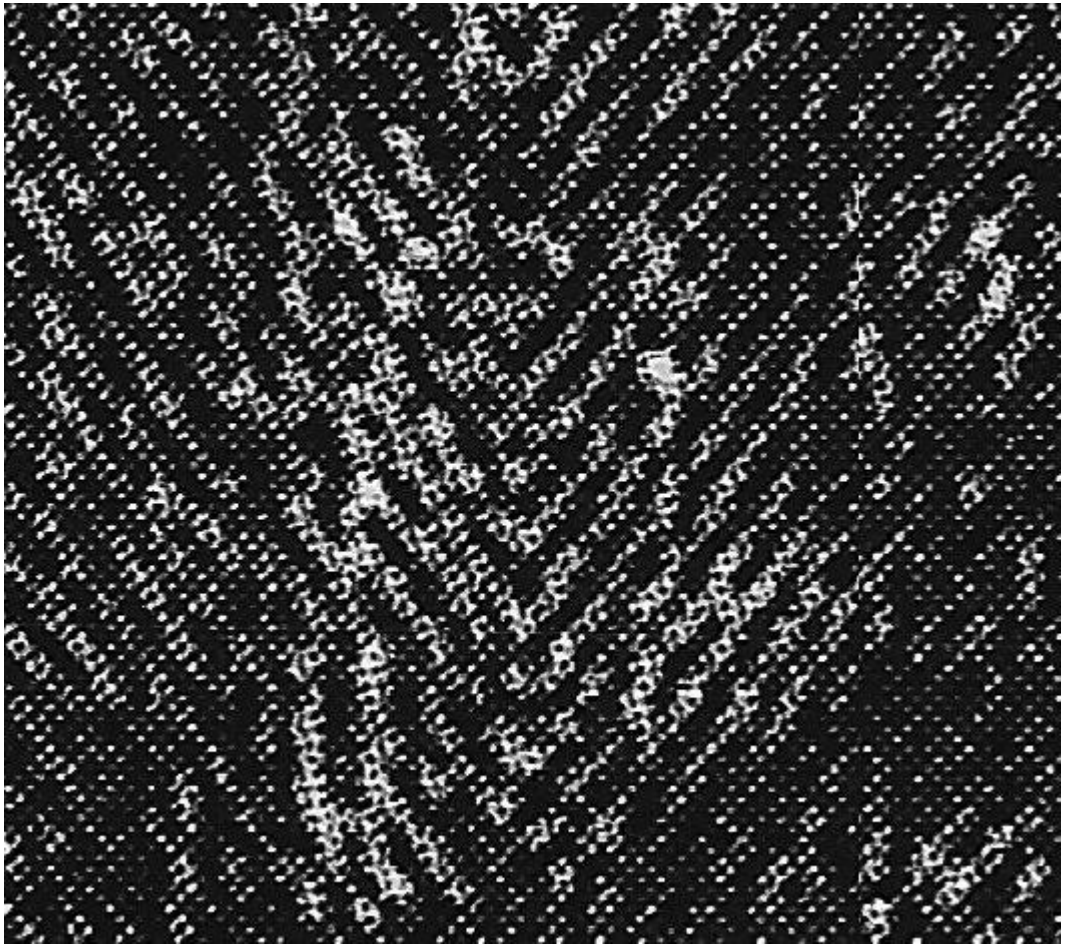


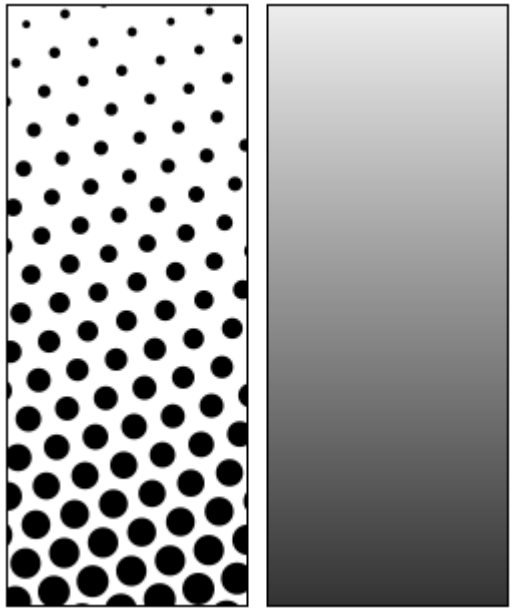
To show all of you how really good is this photo, a magnification of the alleged coin area over the right eye:



And further. Now practical demonstration of the halftone effect on the Shroud of Turin:







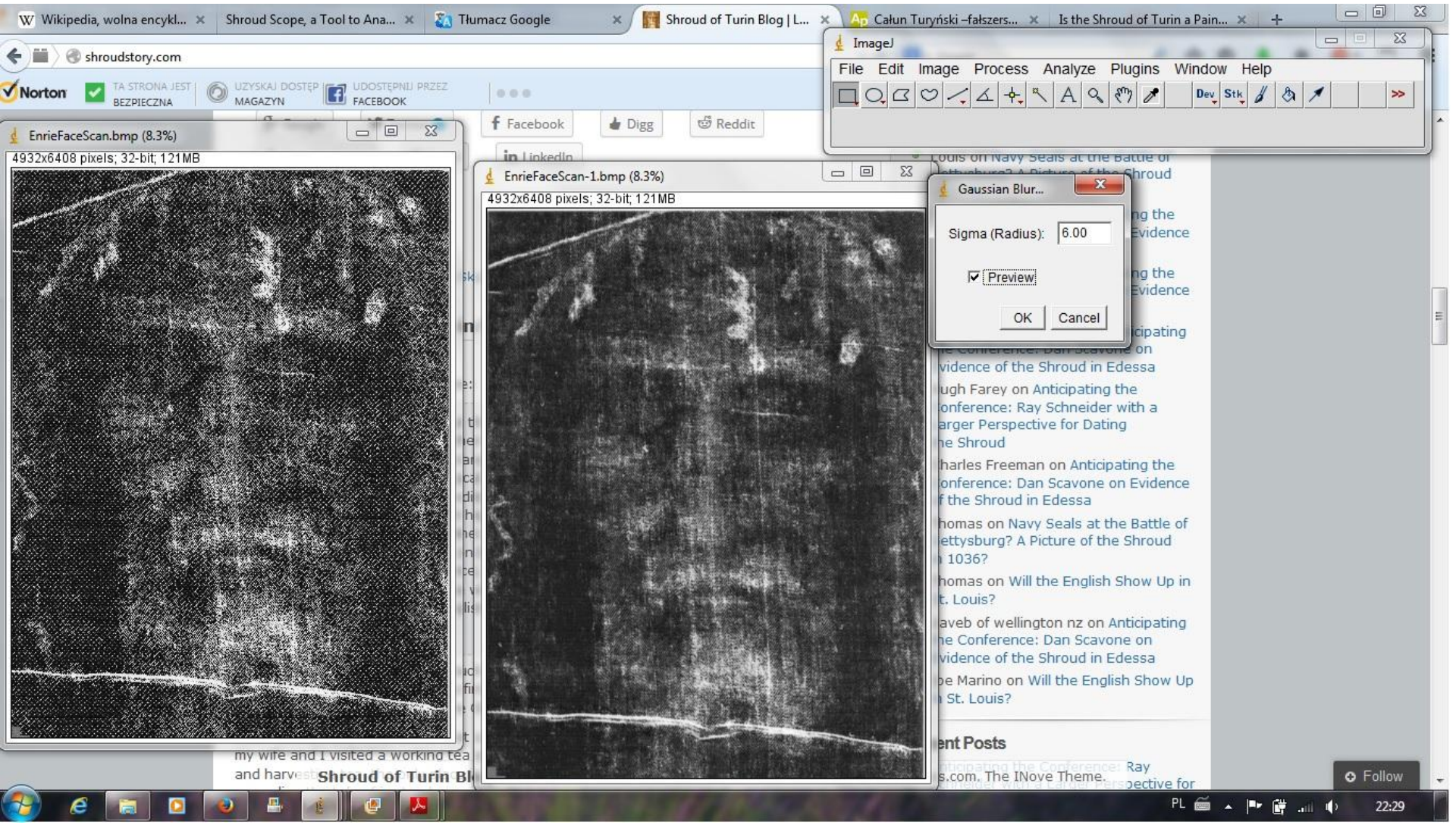
Count: 248160
Mean: 54.761
StdDev: 70.749

Min: 0
Max: 255
Mode: 0 (12949)

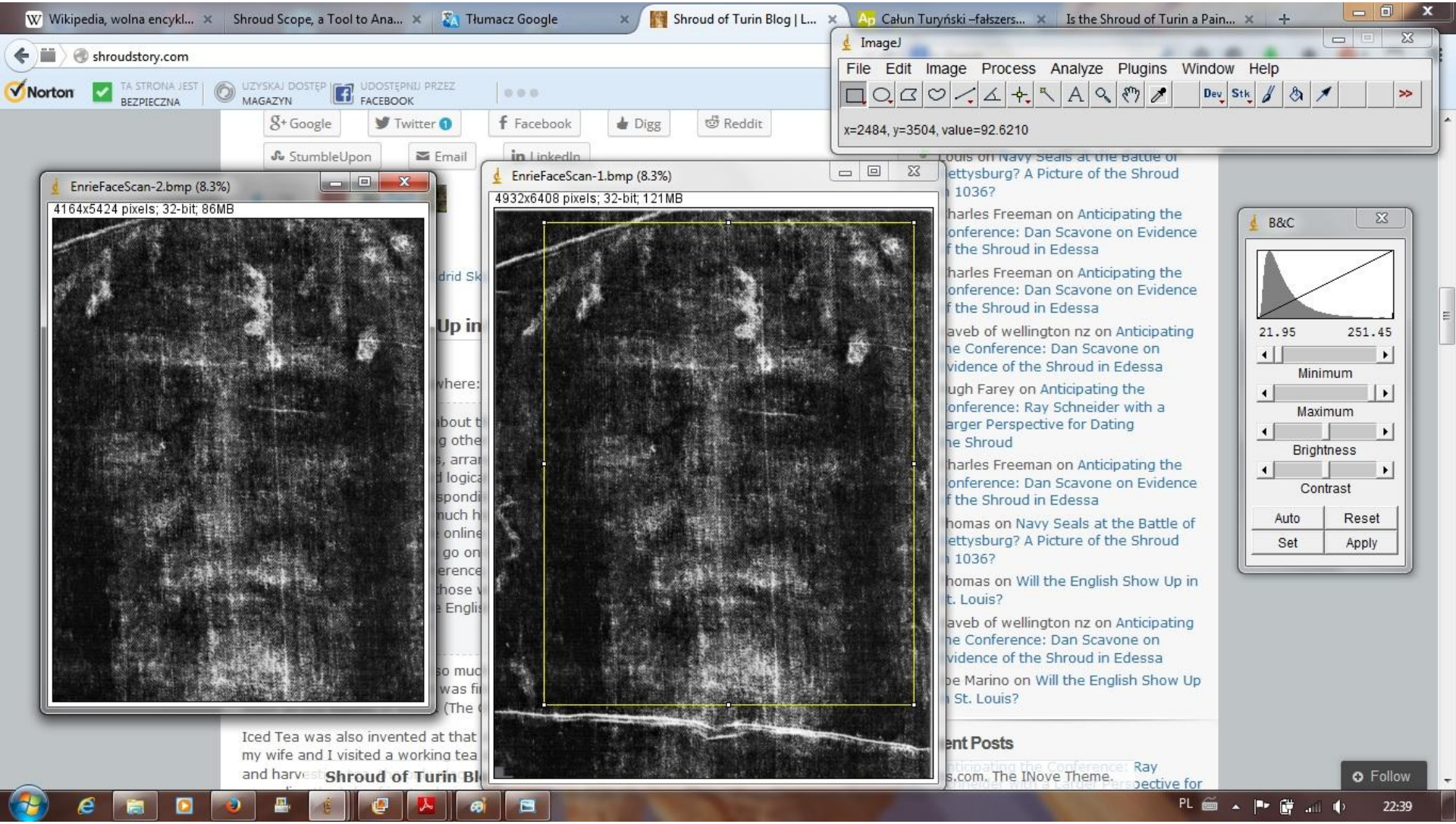
Right below you have histogram of the pixel intensity values.

(Analyze > Histogram)

For practical purposes, if we don't want to have a needle forest in our 3D reconstruction, we need to convolve it with a gaussian.

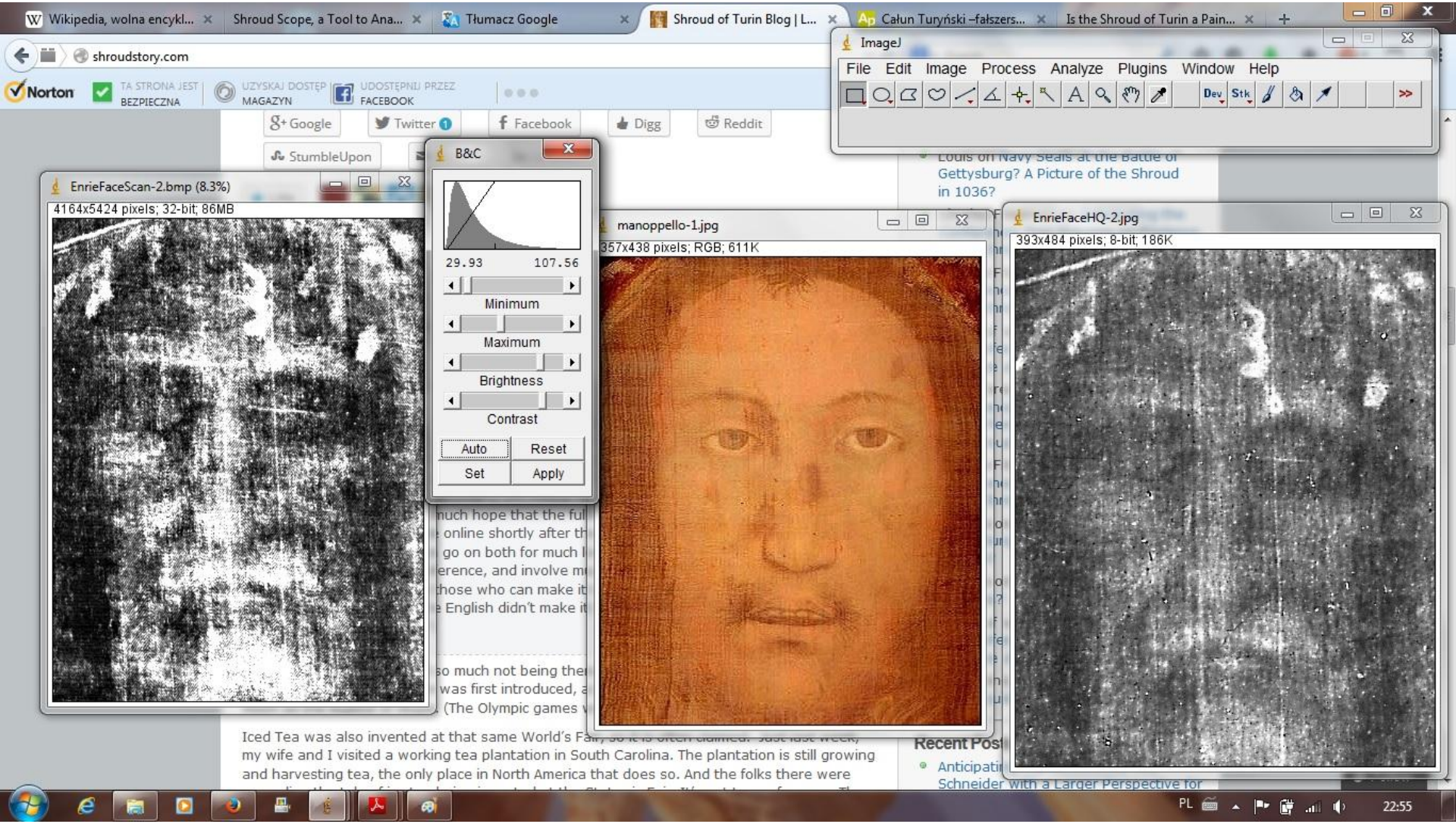


Let’s size it to Manoppello:

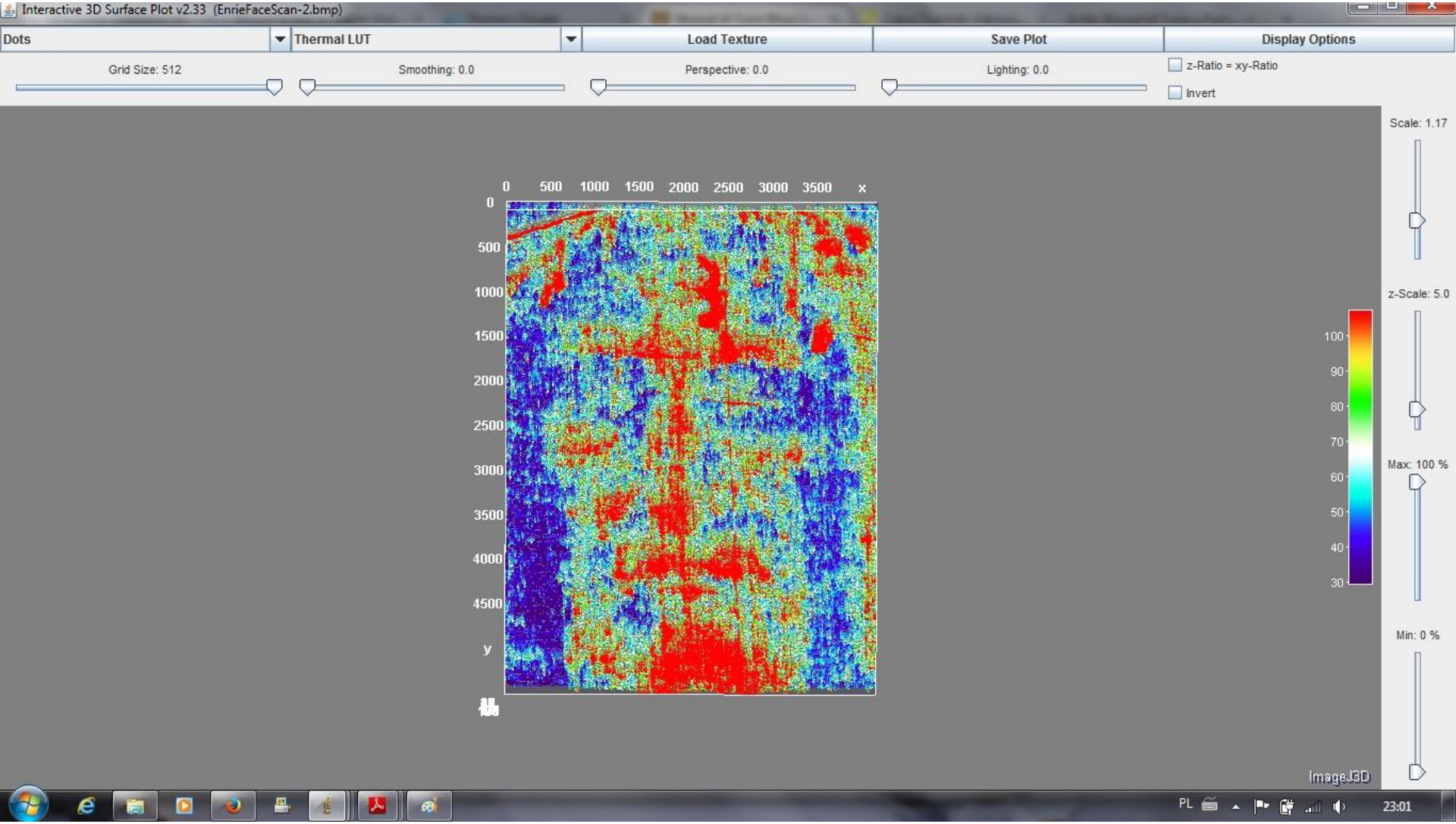


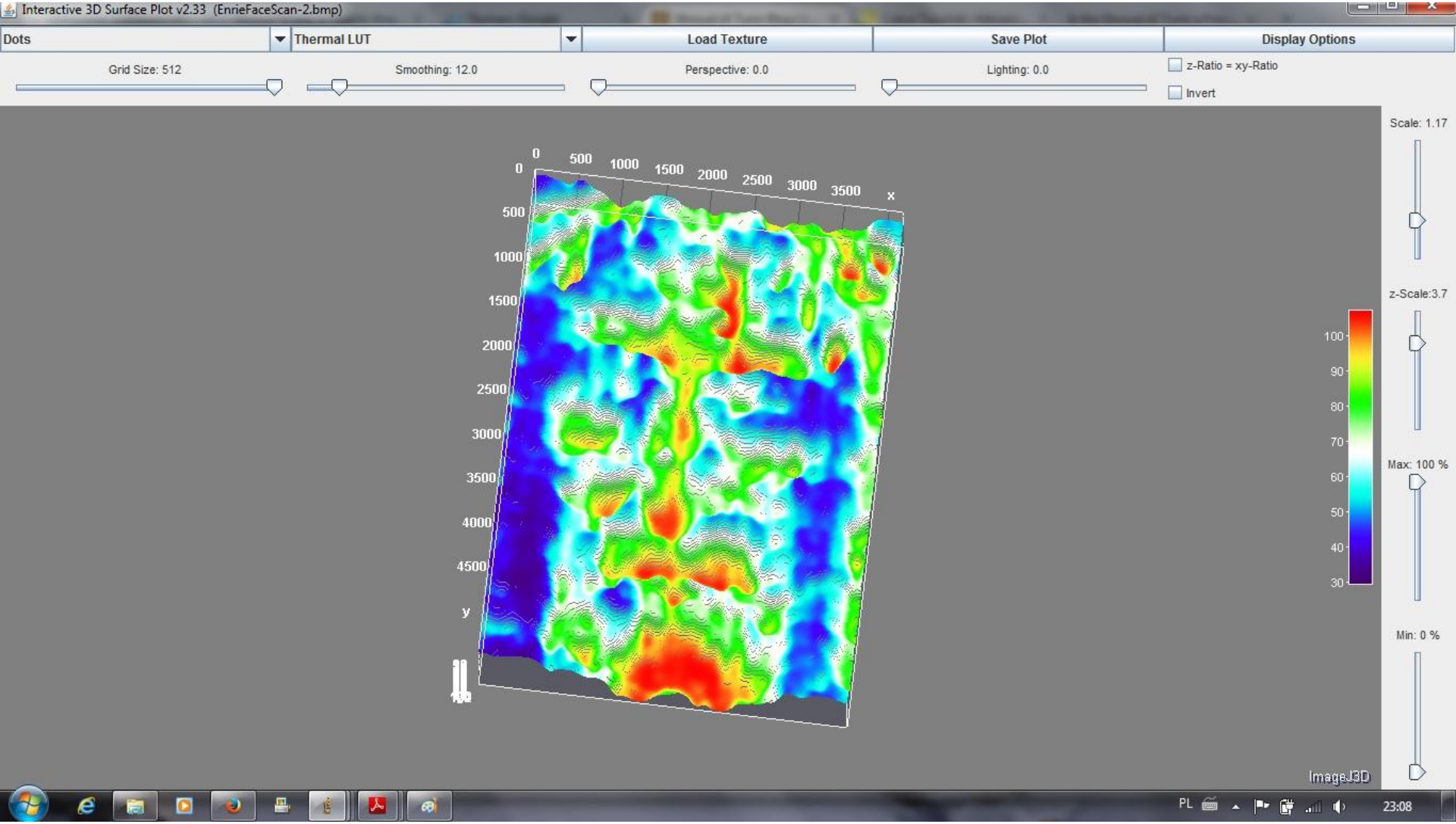
And adjust B&C:

(on the right ShroudScope picture for comparison)



So let’s play with 3D:

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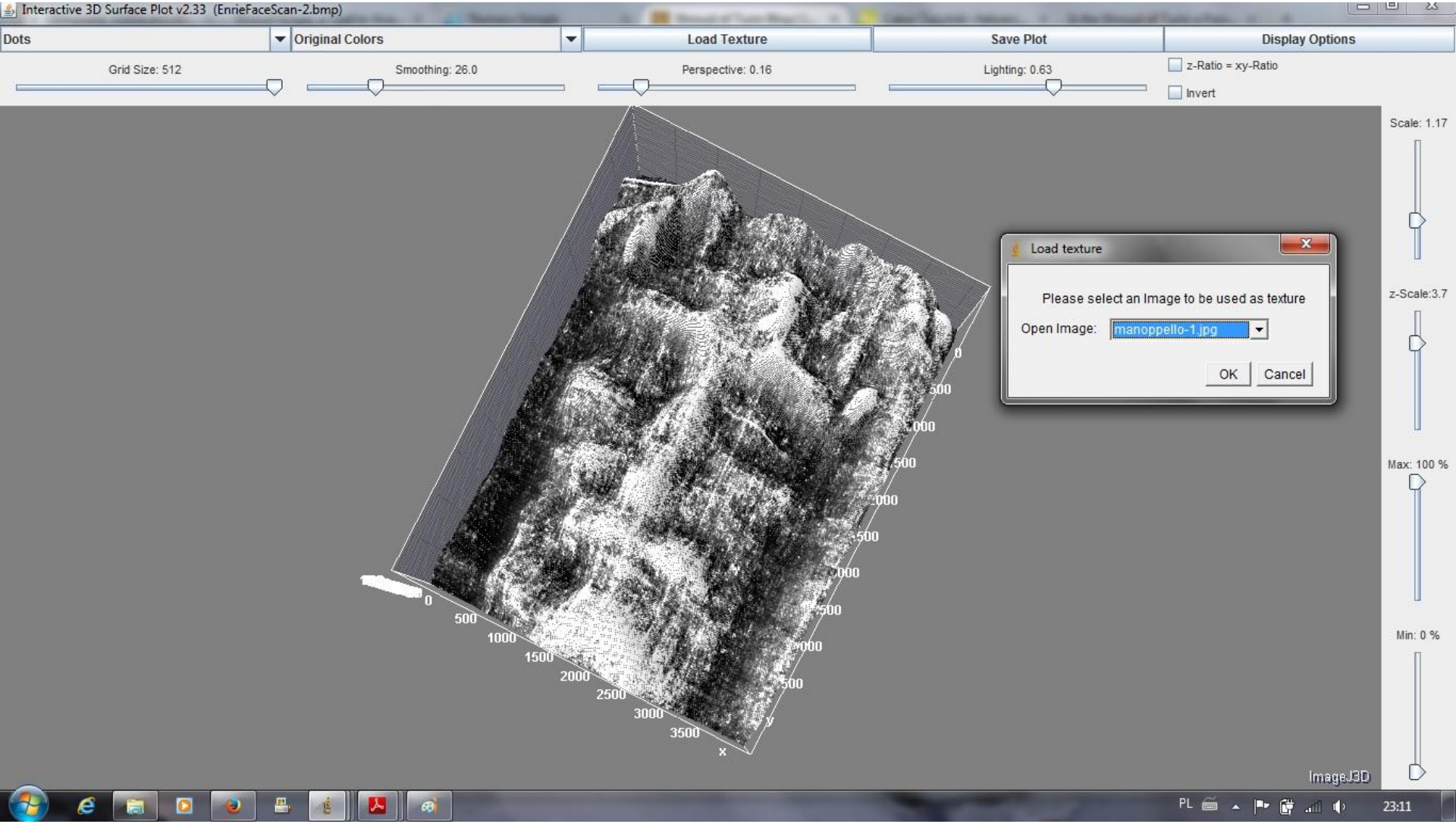
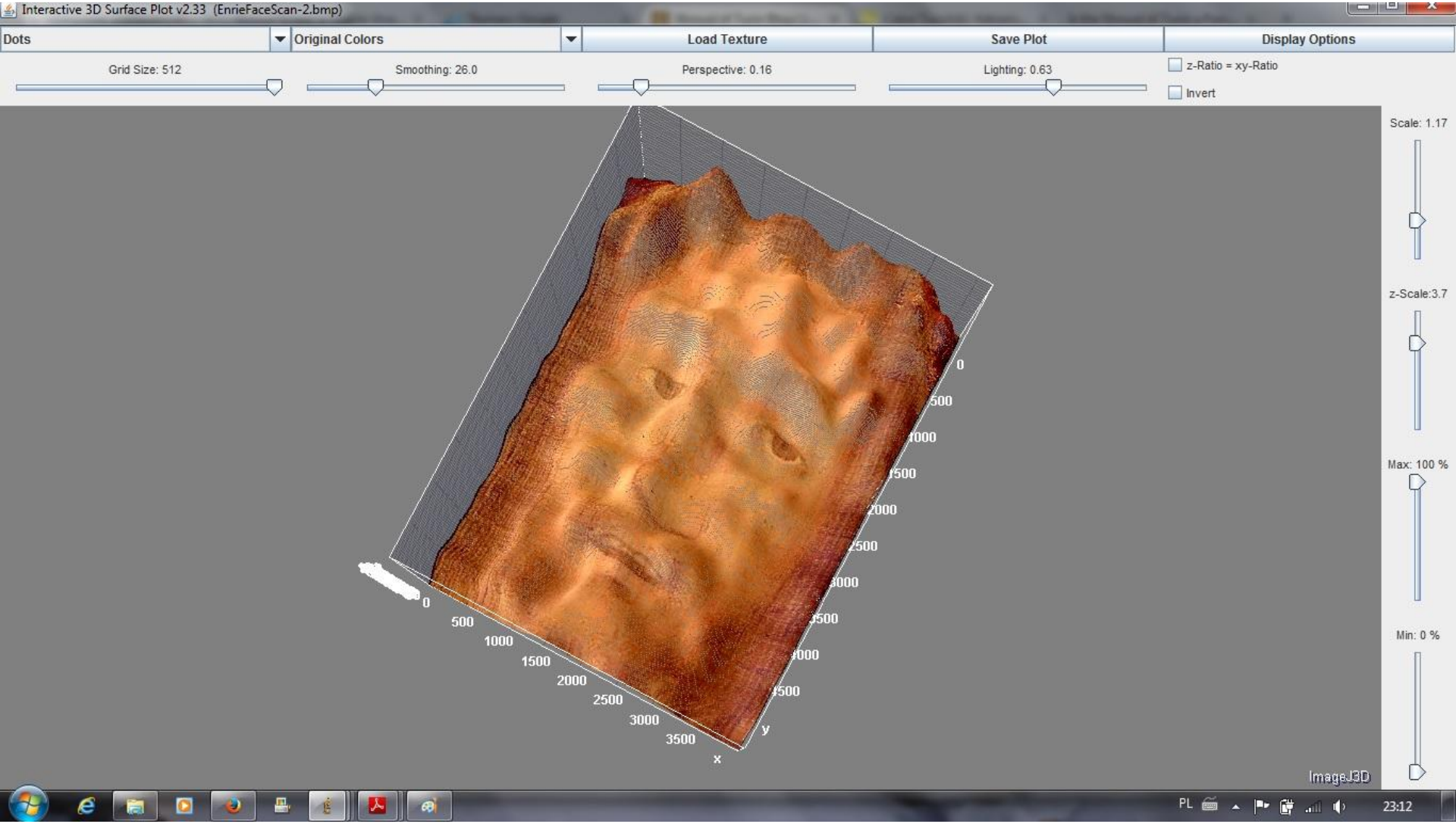
Dots
Thermal LUT
Load Texture
Save Plot
Display Options
Grid Size: 512
Smoothing: 12.0
Perspective: 0.0
Lighting: 0.0
z-Ratio = xy-Ratio
Invert
Scale: 1.17
z-Scale:3.7
Max: 100 %
Min: 0 %
0 500 1000 1500 2000 2500 3000 3500 x
0 500 1000 1500 2000 2500 3000 3500 4000 4500 y
100 90 80 70 60 50 40 30
ImageJ3D
PL
23:08

Now, as I promised, how to overlay it with the Manoppello texture:



Voilà!


Interactive 3D Surface Plot v2.33 (EnrieFaceScan-2.bmp)
Dots
Original Colors
Load Texture
Save Plot
Display Options
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Smoothing: 26.0
Perspective: 0.16
Lighting: 0.63
z-Ratio = xy-Ratio
Invert
Scale: 1.17
z-Scale:3.7
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500
1000
1500
2000
2500
3000
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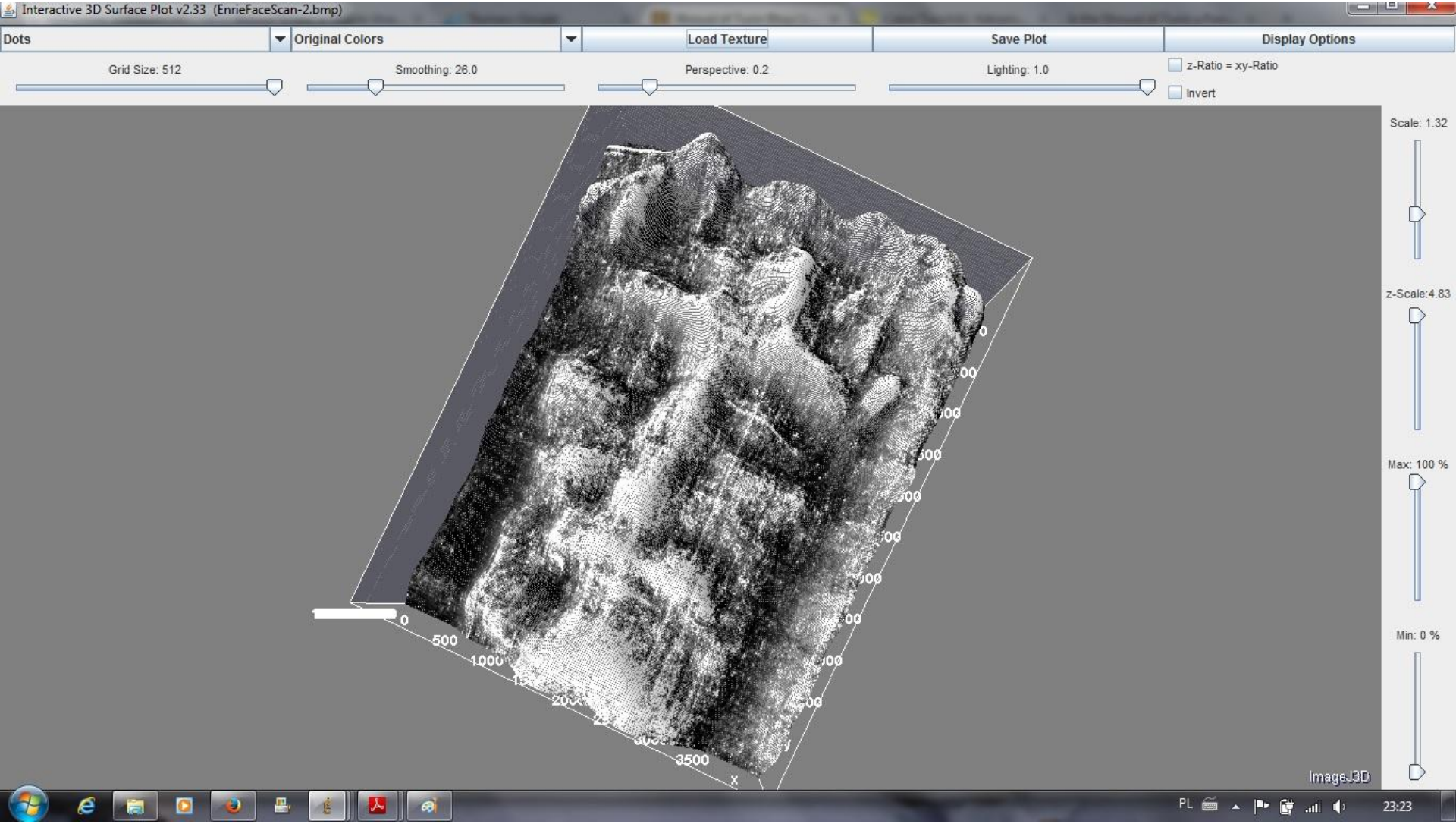
PL
23:12


Interactive 3D Surface Plot v2.33 (EnrieFaceScan-2.bmp)
Dots
Original Colors
Load Texture
Save Plot
Display Options
Grid Size: 512
Smoothing: 26.0
Perspective: 0.2
Lighting: 1.0
z-Ratio = xy-Ratio
Invert
Scale: 1.32
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Max: 100 %
Min: 0 %
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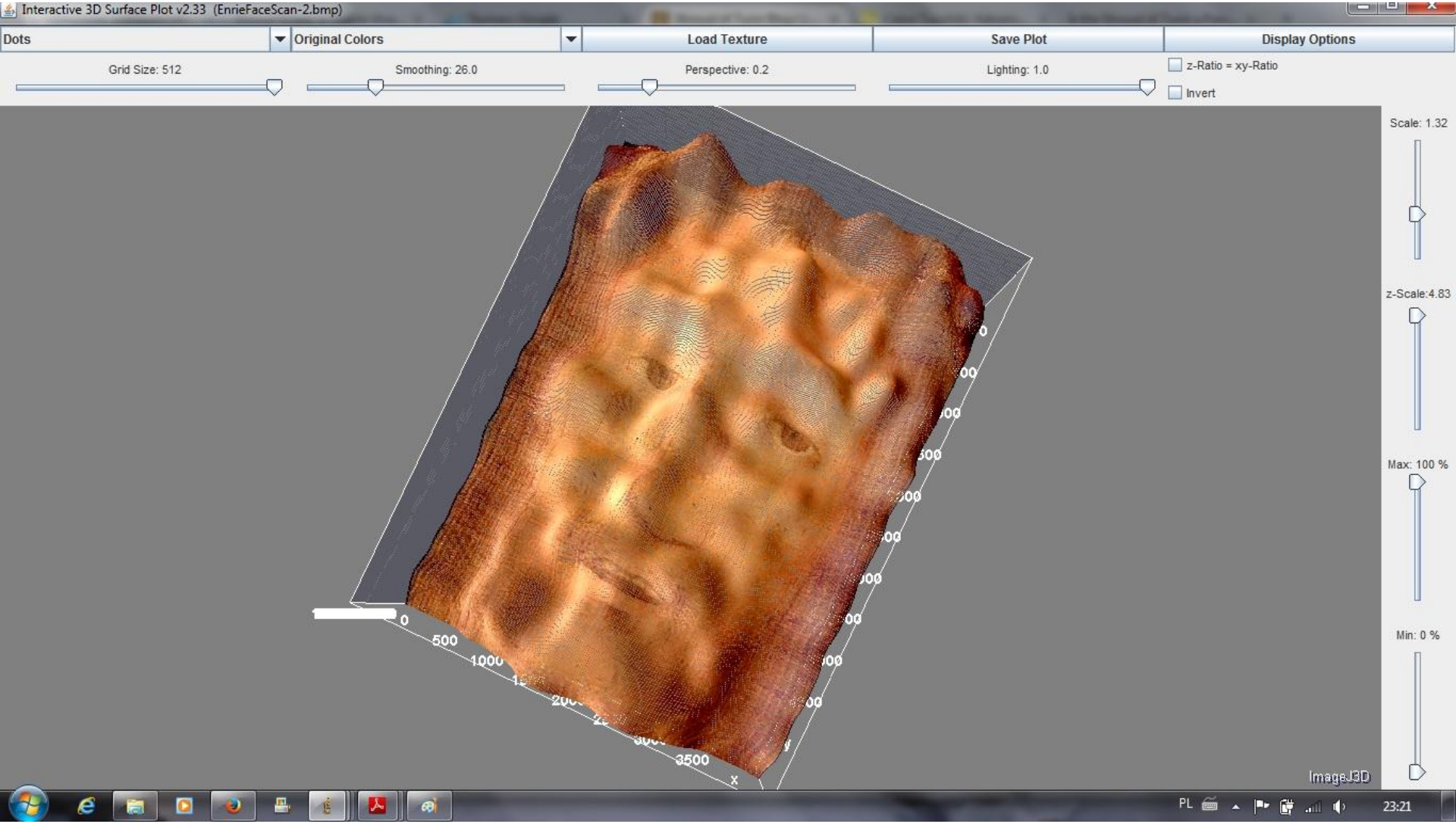
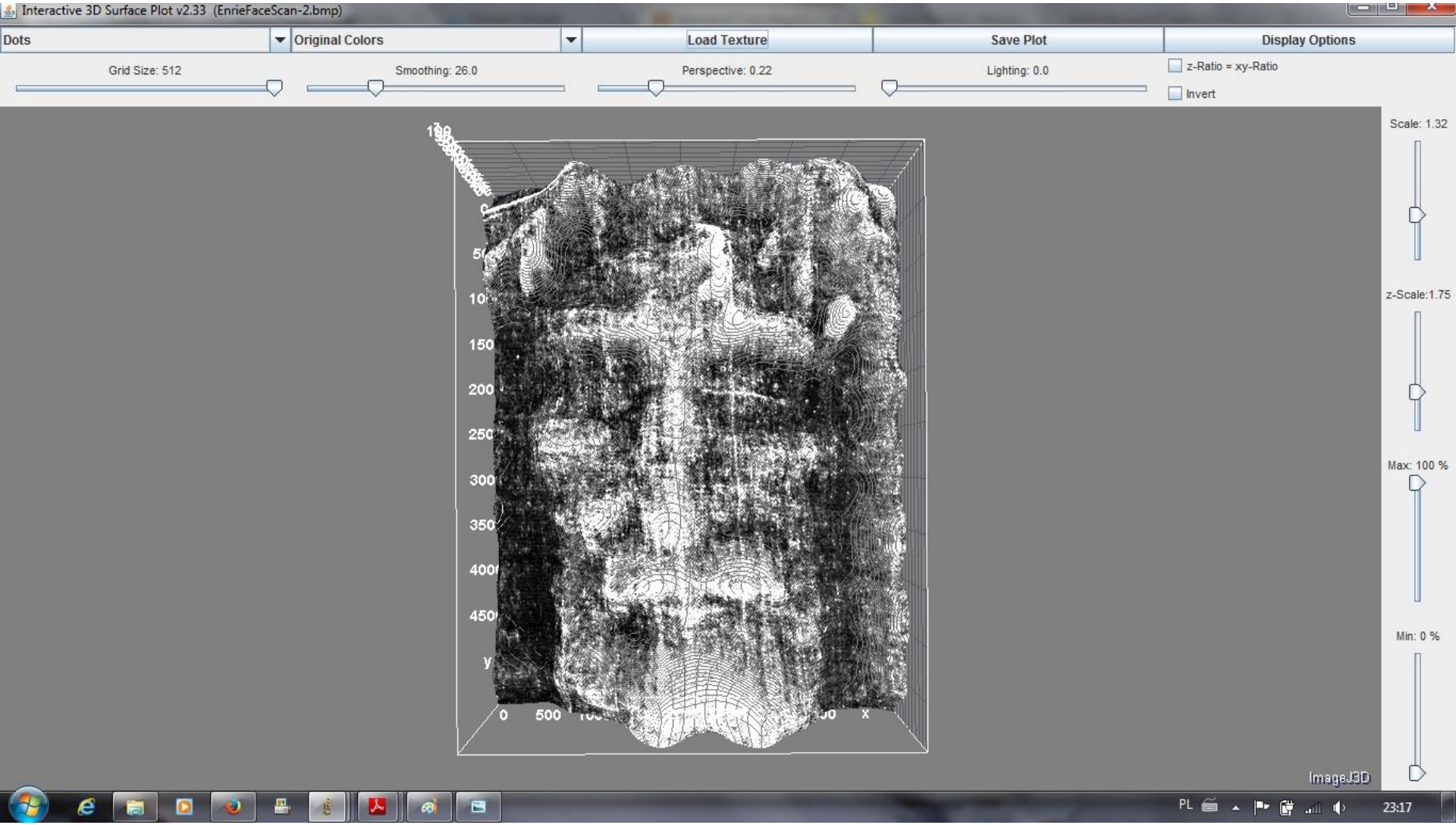
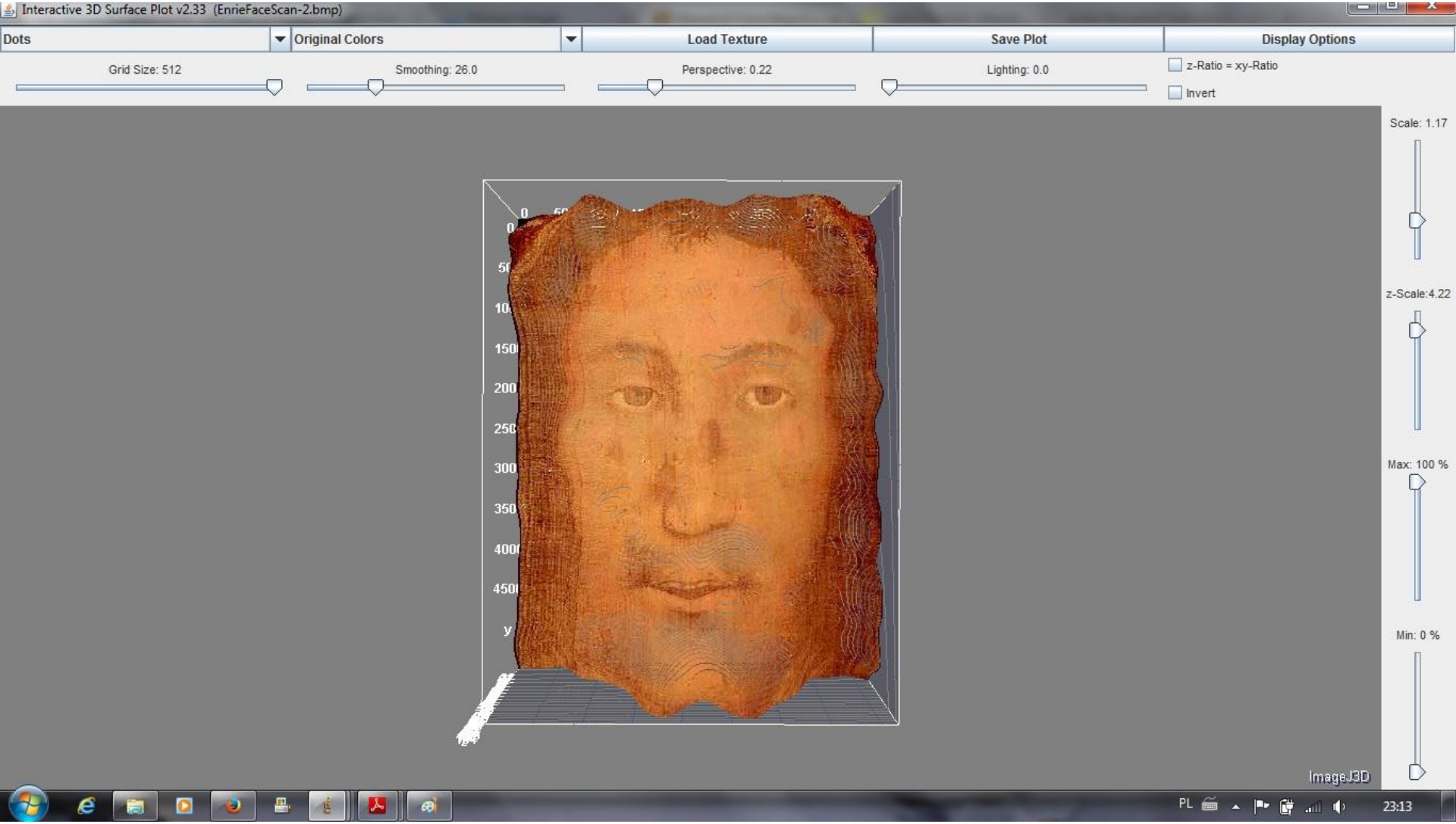
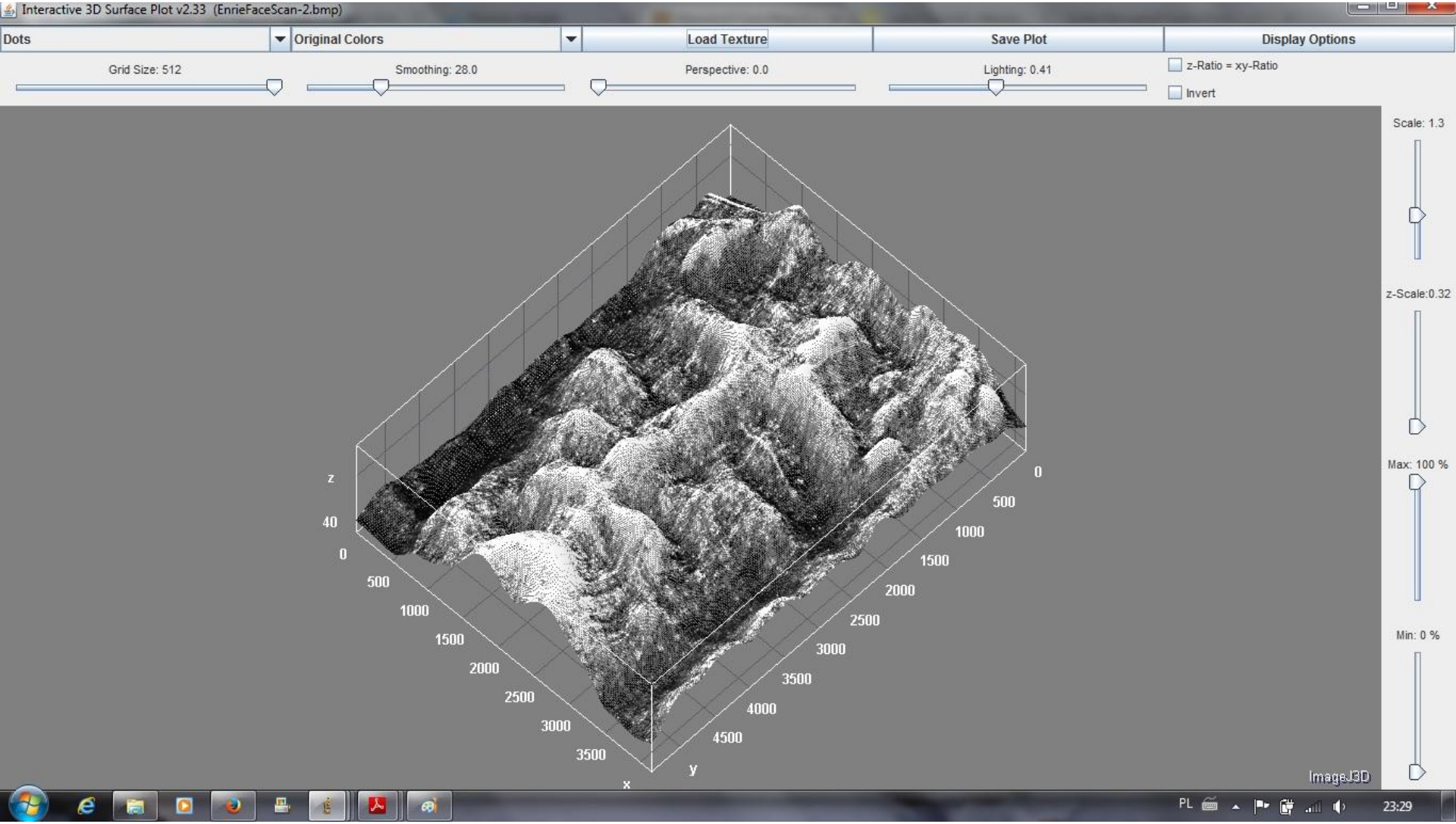
500
1000
3500
x
y
ImageJ3D
PL
23:23

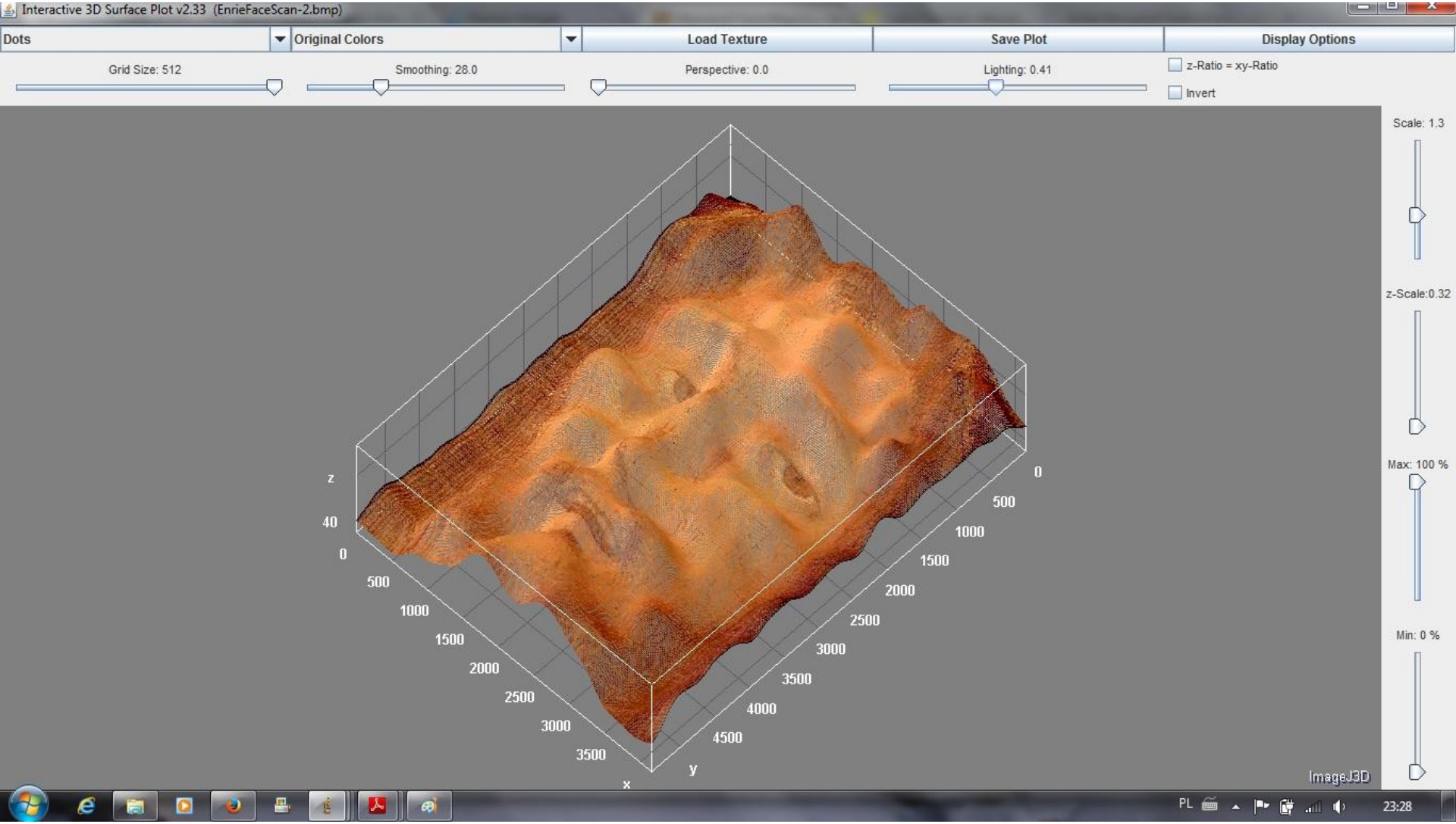

Interactive 3D Surface Plot v2.33 (EnrieFaceScan-2.bmp)
Dots
Original Colors
Load Texture
Save Plot
Display Options
Grid Size: 512
Smoothing: 26.0
Perspective: 0.2
Lighting: 1.0
z-Ratio = xy-Ratio
Invert
Scale: 1.32
z-Scale:4.83
Max: 100 %
Min: 0 %
0
500
1000
3500
x
ImageJ3D
PL
23:21

Some more:


Interactive 3D Surface Plot v2.33 (EnrieFaceScan-2.bmp)
Dots
Original Colors
Load Texture
Save Plot
Display Options
Grid Size: 512
Smoothing: 26.0
Perspective: 0.22
Lighting: 0.0
z-Ratio = xy-Ratio
Invert
Scale: 1.32
z-Scale:1.75
Max: 100 %
Min: 0 %
ImageJ3D
PL
23:17


Interactive 3D Surface Plot v2.33 (EnrieFaceScan-2.bmp)
Dots
Original Colors
Load Texture
Save Plot
Display Options
Grid Size: 512
Smoothing: 26.0
Perspective: 0.22
Lighting: 0.0
z-Ratio = xy-Ratio
Invert
Scale: 1.17
z-Scale:4.22
Max: 100 %
Min: 0 %
ImageJ3D
PL
23:13

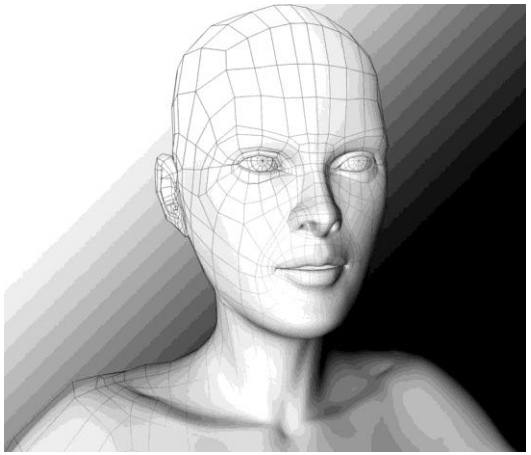

Interactive 3D Surface Plot v2.33 (EnrieFaceScan-2.bmp)
Dots
Original Colors
Load Texture
Save Plot
Display Options
Grid Size: 512
Smoothing: 28.0
Perspective: 0.0
Lighting: 0.41
z-Ratio = xy-Ratio
Invert
Scale: 1.3
z-Scale:0.32
Max: 100 %
Min: 0 %
z
40
0
500
1000
1500
2000
2500
3000
3500
x
0
500
1000
1500
2000
2500
3000
3500
4000
4500
y
ImageJ3D
PL
23:29


Interactive 3D Surface Plot v2.33 (EnrieFaceScan-2.bmp)
Dots
Original Colors
Load Texture
Save Plot
Display Options
Grid Size: 512
Smoothing: 28.0
Perspective: 0.0
Lighting: 0.41
z-Ratio = xy-Ratio
Invert
Scale: 1.3
z-Scale:0.32
Max: 100 %
Min: 0 %
z
40
0
500
1000
1500
2000
2500
3000
3500
x
y
4000
4500
ImageJ3D
PL
23:28

Concluding remarks:

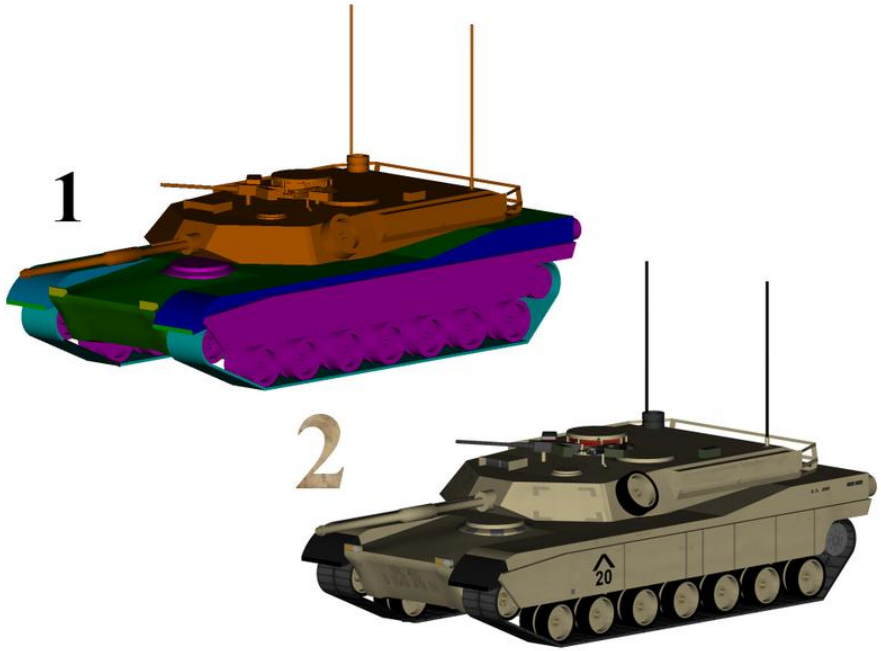
The presented Manoppello overlayings on the 3D Shroud representations are still far from being perfect –this was of course just an exercise. One could rescale both Shroud and Manoppello frames better than me, place it one on another in better positions, and so on. One could also model 3D face of the Shroud much better, filtering it from noises, bloodmarks, weave etc., as well as take into account the folding pattern of the cloth as it covered the face (recall yourself once again excellent *The Real Face of Jesus?* documentary) to make much more realistic outlook of it. But it's not the point here.

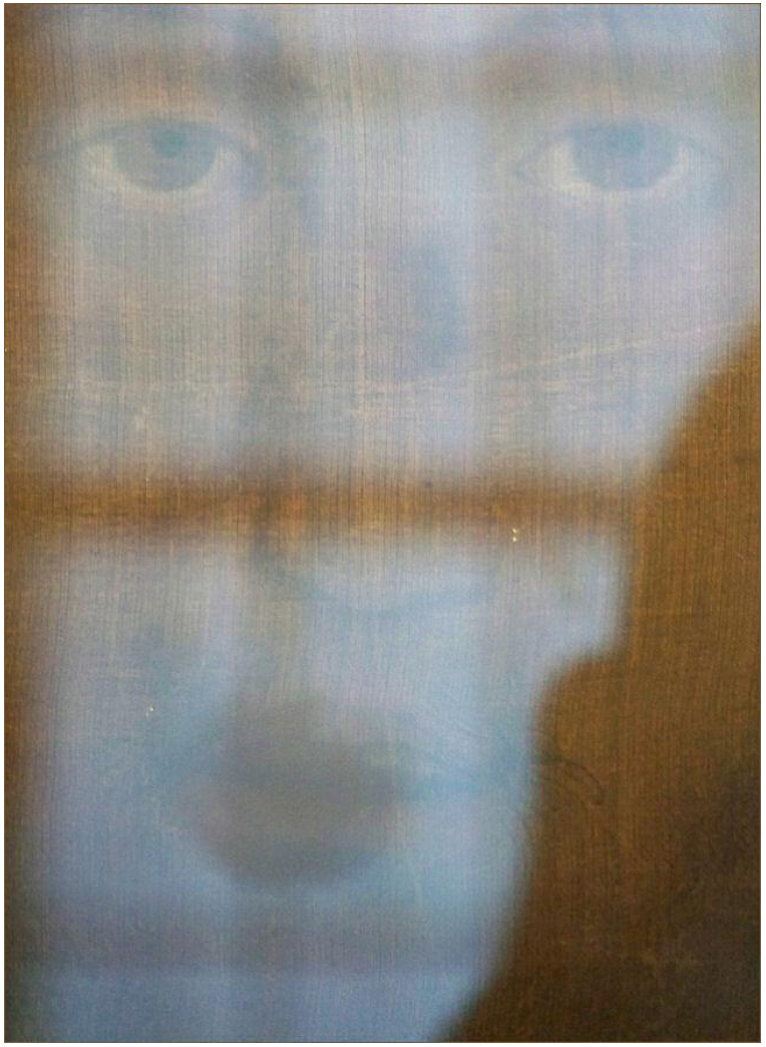
Suppose for a moment that both the Shroud and the Manoppello are authentic relics of Jesus. Being so different, they provide **complementary information.**



The monochromatic Shroud with it's 3D properties provides a **model** Jesus outlook. It is essentially like an old sculpture. It provides information about shape of the object, but no other information like skin, eyes, hair colour.

But what model needs is **texture.** And Manoppello, if genuine may provide it!





It is a real pity, that Ray Downing apparently was unaware of this little transparent veil.