



## ICE - Triangle Trigonometry

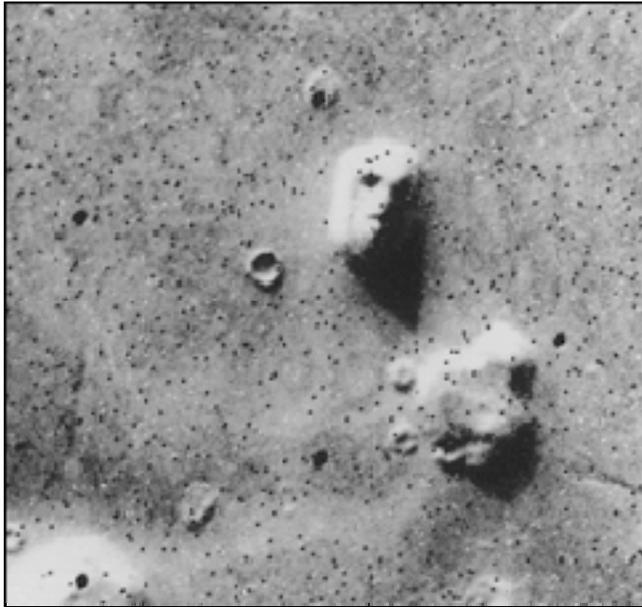


Figure 1: Viking 1 photograph of the Cydonia region of Mars.

In 1976, Project Viking sent a robotic spacecraft to explore the planet Mars. The mission consisted of an orbiter that photographed most of the surface of the planet and a lander that analyzed soil samples and sent the first pictures from the surface of another planet. One of the most mysterious pictures was taken by the Viking orbiter at Martian latitude  $41^\circ$  North (see Figure 1<sup>1</sup>). This photograph appeared to show a (presumably) huge formation or sculpture that looked eerily like a human face.

The "Face" was located in a region of the Martian landscape known as Cydonia. When people began to closely examine other images of the Cydonia region (see Figure 2<sup>2</sup>) they noticed objects that appeared to resemble pyramids. Because the "Face" in Figure 1 has a resemblance to popular images of ancient Egyptian Pharaohs, these images fueled speculation that the formations might be artificial, and that there might be some connection between the formations and ancient civilizations on Earth.

In 1997 a new mission to Mars, the Mars Global Surveyor, was launched by NASA (see Figures 3<sup>3</sup> and 4<sup>4</sup>). A major part of the Global Surveyor's mission was to produce high resolution photographs of the surface of Mars. Obviously, photographing the surface of an entire planet is a time-consuming process and it was not until April of this year that the Global Surveyor photographed the Cydonia region. People waited with baited breath for NASA's press conference on May 24, 2001, when NASA officials were scheduled to release the Global Surveyor's high resolution photographs of the "Face."

<sup>1</sup> Image source: NASA, <http://www.nasa.gov/>

<sup>2</sup> Image source: <http://www.qtm.net/>

<sup>3</sup> Image source: <http://www.jpl.nasa.gov/>

<sup>4</sup> Image source: <http://www.enterprisemission.com/>

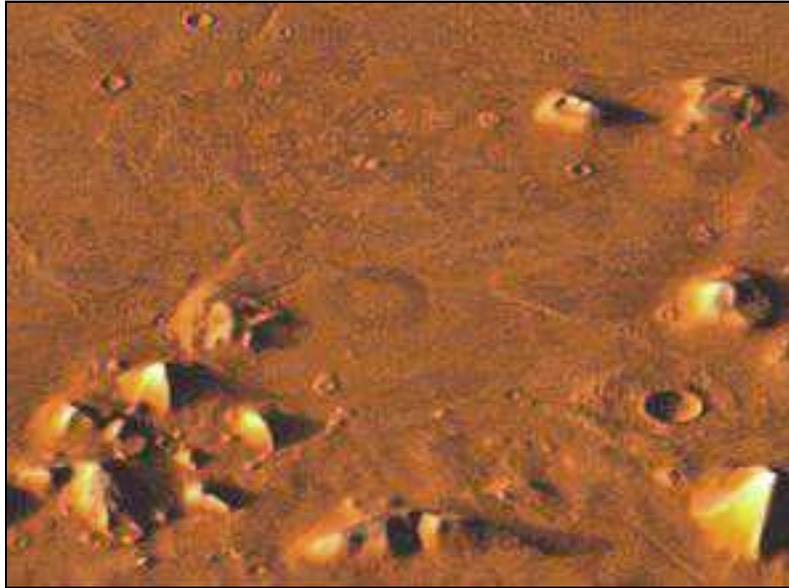


Figure 2: An oblique photograph of the Cydonia region. The “Face” is in the upper right hand corner of the image

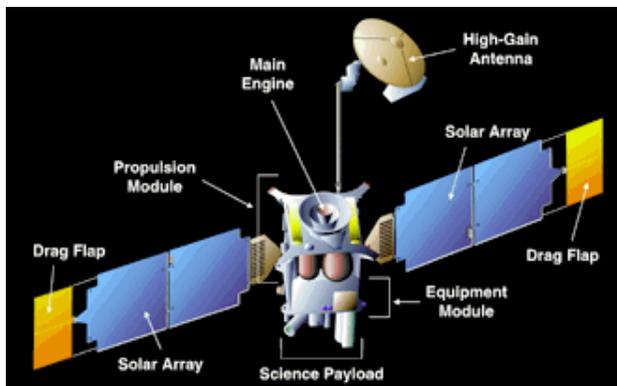


Figure 3: The Mars Global Surveyor.

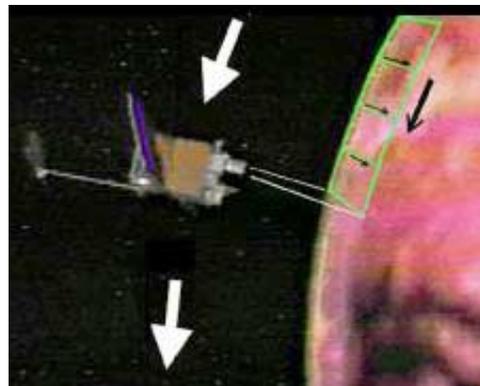


Figure 4: Diagram showing how the Mars Global Surveyor will photograph features on the surface of Mars.

- ***The Mars Global surveyor photographed the “Face” from a height of 165 km above the surface of Mars. The angular length of the “Face” was measured to be 0.0218147 radians, and the angular width of the “Face” was measured to be 0.0145444 radians. How large (width and length in kilometers) is the “Face” ?***

**Epilogue:**

**The image made by the Mars Global Explorer (along with poorer quality images made by probes in 1976 and 1998) is shown in Figure 5<sup>5</sup>. The higher resolution images made this year do not show any obvious signs of a deliberate, artificial design or sculpture - instead the “Face” looks quite unremarkable.**

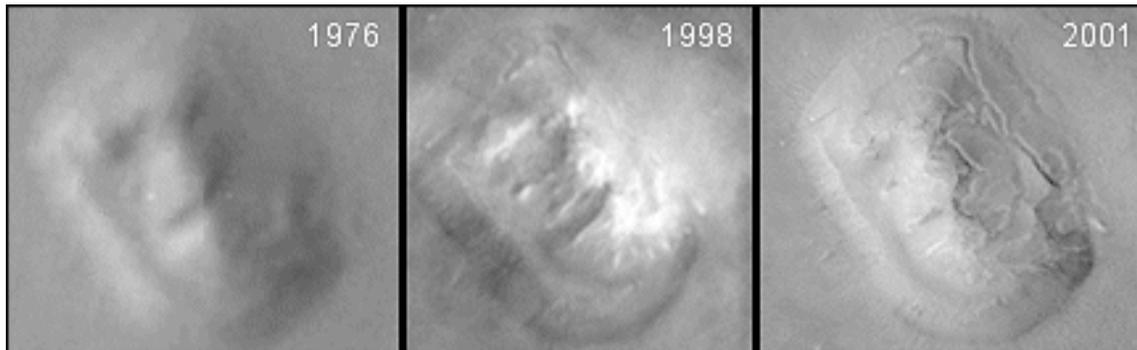


Figure 5: A series of images of the “Face” at Cydonia from 1976, 1998 and 2001.

**You might think that the images of the Cydonia region produced by the Mars Global Explorer in 1998 and 2001 could end speculation that a massive structure indicative of intelligent life existed on the surface of Mars.**

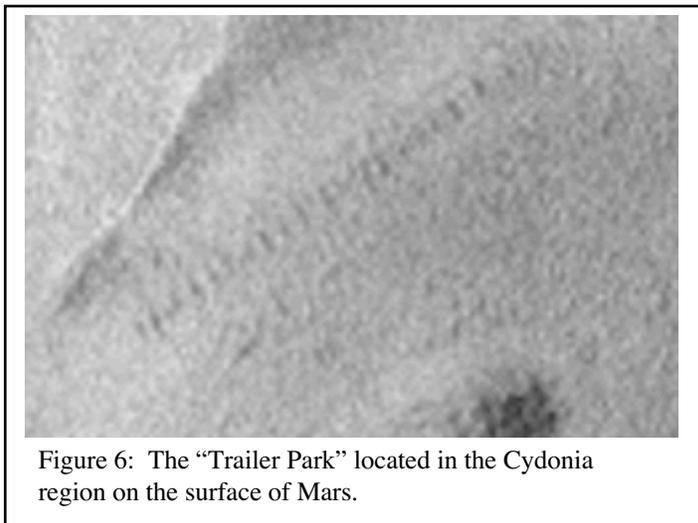


Figure 6: The “Trailer Park” located in the Cydonia region on the surface of Mars.

**Far from it – people interested in the Cydonia region have found what they claim to be further signs of constructions made by intelligent life in the recent images of the region. People claim to have located structures in the shapes of: a bull, an insect, a cobra, a boar, an Egyptian man in profile, a fish, a cat, a goose, some sort of generic reptile, a dog, a fox, an oryx, a vulture and something resembling the grazing**

**animals in Cro Magnon cave paintings from France. My personal favorite is the recently discovered formation (see Figure 6<sup>6</sup>) that has been dubbed the “Trailer Park.” I’m no expert, but I would be quite surprised to learn that a “double-wide” was the ultimate architectural achievement of an advanced space-faring civilization.**

<sup>5</sup> Image source: NASA, <http://www.nasa.gov/>

<sup>6</sup> Image source: <http://www.irupert.com/mars/>