

# THE MAKING OF THE PAINTING

by L. Robert Morris and Don Connolly



We chose to create a view of the eclipse as if photographed by a 35 mm camera with a 1000 mm lens. As per Fred Espenak's NASA eclipse bulletin diagrams, this gives a corona nearly filling the film frame, and thus *our* picture frame.

The one photo known to exist of the 1973 corona is that by Wendy Carlos (shown at left). The angle of the corona and the placement of the bead of sun at Concorde's "exit point" from the umbra were calculated by Fred Espenak, of NASA.

Obviously, the view of Concorde against the sun must be from below. To portray Concorde as roughly the same width as the sun, which we had anticipated would be aesthetically pleasing, the SST's wingspan must subtend about 0.5 degrees. The distance to the "camera" below Concorde must therefore be its half-wingspan (12.75 m) divided by  $\tan(0.25 \text{ degrees})$ , half

the angle subtended by the sun. That is,  $(12.75 \text{ m}) / (0.00436) = 2924 \text{ m}$  – about 3000 m.

Light is required on Concorde's underside in order to "visualize" it! Where do you get this light? Well, on the edge of the umbra, from the penumbral region – and at 17,000 m, from outside the penumbral region as well! That gives two choices: Concorde has just entered the umbra, or Concorde is about to exit the umbra. At these two positions, you will also have the formation of a diamond ring.

To see Concorde *enter* the umbra, a west African observer would be facing the eclipsed sun – some 63 degrees above the horizon, just north of east – his back to the SST's flight path. Thus, Concorde would appear to dive down from above and behind the observer, and disappear into the umbra.

To see Concorde *leave* the umbra, an observer in east Africa would be facing the eclipsed sun – about 74 degrees above the horizon, just north of west – his front facing the SST's flight path. An invisible Concorde would rise up over the horizon and exit the umbra.

Now a plane "diving down" looks like it is about to crash, while one rising up is "triumphant".

So it had to be Concorde exiting the umbra. The only location which was within totality, but also had light on the underside of the SST, the beginning of a diamond ring, *and* an aesthetically pleasing composition.

Concorde, with its multiple curves, is an incredibly difficult aircraft to visualize from any specific angle. We attached a Concorde plastic model to a ceiling, dropped a thread down to the floor at 74 degrees, and then photographed the model along the thread with long lens. That photo was the starting point for the artist's accurate portrayal of the aircraft.

The painting is an optical illusion. If you hold it up at 74 degrees, Concorde is flying horizontally – not climbing!

The Concorde prototypes (001, French, and 002, British) were vastly different than the pre-production models (01, 02) and the production ones. Much shorter in the tail, the nose quite different, an opaque visor (production models had a transparent heat-resistant glass visor), and equipped with air-brakes! To accurately portray 001 required inspection of many photos in a dozen books, and on the web.

The pilot confirmed that the navigation lights were on.

The Concorde 001 prototype now rests in France's Museum of Aviation at LeBourget airport, an African eclipse logo adorning its nose and a production Air France Concorde at its side:

[www.concordesst.com/001.html](http://www.concordesst.com/001.html) [www.mae.org/index.php?id=588](http://www.mae.org/index.php?id=588)

In a 2006 survey within the UK, Concorde was chosen as the best British design of the 20th century: [www.cbc.ca/arts/story/2006/03/17/concorde-design.html](http://www.cbc.ca/arts/story/2006/03/17/concorde-design.html)