
Astronomers' Universe
Pierre Léna
Racing the Moon's Shadow with Concorde 001
-WTSS
Springer

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Racing the Moon's Shadow with Concorde 001

Springer

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Cover illustration and Frontispiece: Racing the Moon by Don Connolly, Sydenham, Ontario, Canada. Conception by L. Robert Morris, Ottawa, Canada. Composition by Don Connolly and L. Robert Morris. Acrylic on board (49x68 cm), 2004. This artist view is done with the assumption that the viewer is located 3,000 m below the aircraft, at latitude 16.19°N, longitude 14.38°E, altitude of Concorde 001 17,602 m above Niger, time : 12h 07 min 24 s UTC.

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I dedicate the English translation of this book to the young students of Ross School, where they happily discover the beauty of science, the richness of human cultures, and how best to serve their sisters and brothers, inhabitants of our planet

Acknowledgements

I am grateful to many people who have helped me to relive the details of this story: first and foremost, André Turcat, for our friendly discussions and for allowing me to use his own recollections, but also Michel Rétif, our flight mechanic; Hubert Guyonnet, our radio navigator, and Henri Perrier, sadly missed; my astronomer colleagues, John Beckman, Donald Hall, Donald Liebenberg, Alain Soufflot, Paul Wraight, and Serge Koutchmy, who shared our enthusiasm for the various science programmes on the flight of 30 June 1973; the team at the *Musée de l'air et de l'espace* in Le Bourget, including the director Catherine Maunoury and the curator Christian Tilatti, for setting up a permanent exhibition beside Concorde 001; Jean-Pierre Sarmant, for careful and expert copy-editing, and the anonymous referee at the *Centre national du livre*; Robert L. Morris, a Canadian university teacher, as keen on Concorde as he is on eclipses, who provided me with many documents and ideas for this work. The Canadian artist Donald Connolly went to great lengths to describe the context of the 1912 and 1973 eclipses and generously allowed us to reproduce his two paintings here. The illustrations owe much to the photographer Jean Mouette and the philatelist Henri Aubry, and also to Vincent Coudé du Foresto, who flew aboard the Air France Concorde for the 1999 eclipse, André Girard, who led the environmental tests on Concorde from the *Office national d'études et de recherches aéronautiques*, and Jim Lesurf, who was part of the British science team. Thanks must also go to the computer expert and amateur astronomer Xavier Jubier.

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[1] The *Fondation des Treilles* was set up by Anne Gruner-Schlumberger with the aim of encouraging a dialogue between science and the arts and hence to stimulate progress in contemporary research and creativity. It hosts researchers and writers at the *Domaine des Treilles* in the Var region of France: http://www.les-treilles.com

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Overture

[. . .]*mon luth constellé*
Porte le Soleil noir [. . .]
Gérard de Nerval[2]

On that 30 June 1973, the summer Sun rose over Las Palmas, the capital of the Canary Islands off the African coast, but this time there was something different in its appearance. A piece of the solar disk was missing, blacked out by the edge of the Moon, for our satellite had just begun to move between the Sun and the Earth. At sunrise on the same day, far to the west in Dutch Guiana (now Surinam), the tree frogs of the species *Hyla calcarata* began to chorus, despite the unusual time of day.[3] For indeed it was there on the equator that the great dark disk formed by the Moon's shadow on the surface of the Earth, surrounded by penumbra, began its race towards the east, moving at a speed of more than 2000 km an hour relative to the ground, soon to cross the African coastline. Astronomers, who know how to predict not just the occurrence, but all the details of these eclipses, had explained how this one would be total at every point on the Earth that the shadow would sweep past and partial in each region falling only in the penumbra. Better still, in Africa, total obscurity would last, exceptionally, for 7 min, and the sky would be so dark that the stars would be visible even at midday. This record length would make it the eclipse of the century, as announced by the media. By around 10 o'clock in the morning, the black indentation had grown to block out almost half of the Sun's disk. Slowly, a great white bird began to move across the tarmac at Las Palmas airport to position itself on the runway. Fitted out with a bright red survival suit—standard dress for test flight crew members, in case they need to be fished out of the sea—I found myself aboard Concorde 001F-WTSS, the prototype of the future supersonic

[2] [. . .]*and my constellated lute*
Bears the black Sun [. . .]

[3] Jean Lescure: *Comportement vocal des amphibiens et des oiseaux au Surinam*. In: *Soleil est mort: l'éclipse totale du 30 juin 1973*, G. Francillon & P. Menget (eds), pp. 91–103 (1979). See the bibliography.