

tual umbrella as willpower, motivation, social norms, leadership, diffusion of responsibility, and intergroup relations. Despite the compelling stories he recounts, even casual readers should be sensitive to these kinds of scientific details. Without clearer delineation of the psychology behind these highly diverse kinds of mindless behavior, readers may be left, once again, with behavior changes that they cannot maintain.

#### References

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## EXHIBITIONS: ASTRONOMY

# Transit Reflections

Deborah Dixon

The Royal Observatory is a rich palimpsest of scientific practice and discovery. Located on a promontory in Greenwich Park, London, the site comprises several buildings. Flamsteed House, the earliest and the original observatory, was built in 1675 on the orders of King Charles II. Later additions—the Meridian Building, the Altazimuth Pavilion, the Astronomy Centre, and the Peter Harrison Planetarium—stretch back from the Meridian Courtyard and Gardens. Their standing collections, displays, and demonstrations make clear the crucial role played by Greenwich astronomers and their diverse instruments in charting the immense spaces of the cosmos. They also evidence how the observatory operated as one of many nodes in a vast cultural, as well as scientific, network enamored with discerning the nature of the universe.

This simultaneously site-specific and globe-spanning history forms the basis of *Measuring the Universe*, an exhibition developed to mark the 5–6 June transit of Venus.

The reviewer is at the Institute of Geography and Earth Sciences, Aberystwyth University, Aberystwyth, Ceredigion SY23 3DB, Wales, UK. E-mail: dxd@aber.ac.uk



Wolfgang Tillmans's *Venus transit* (2004).

Over a 243-year cycle, Venus passes between Earth's orbital plane and the Sun four times—twice in pairs 8 years apart, with the pairs separated by gaps of 121.5 and 105.5 years—appearing as a small, dark spot crawling slowly across the Sun's disc. After June, the rare event will not recur until 2117.

The exhibition uses text and images to provide a capsule history of how, over the past 400 years, astronomers have sought to use transits to gauge the distance between Earth and Sun. The principle of parallax was crucial to such efforts, and designer Richard Hogg's animated video provides a useful primer on this. In 1716, Edmund Halley (soon to become Royal Astronomer) exhorted governments to organize geographically disparate expeditions as a means of achieving the greatest parallax possible for the transit of 1761. Over a hundred observers subsequently took part. In 1769, James Cook took measurements in Tahiti from a point subsequently labeled "Point Venus," while French astronomer Guillaume Le Gentil tragically missed observing both events due to rough waters off of Mauritius in 1761 and overcast skies in Pondicherry eight years later.

Yet, as the story unfolds around the room, it becomes clear that such techniques became overshadowed by new means of measuring astronomical distances—not only between Earth and Sun but also between stars, between galaxies, and beyond. With

the introduction of radar pulses and spectroscopic observations, for example, cosmic horizons were pushed ever further away. In consequence, the scientific importance of the transit of Venus became a largely historical curiosity, while the exhibit itself risks becoming a somewhat moribund account of ever-reaching scientific progress.

That fate is avoided, however, and the exhibition given uncommon animation by the careful effort to incorporate recent art. Photographer Wolfgang Tillmans's *Venus transit* occupies a prominent position. In it, the tiny spectacle of Venus passing in front of the Sun becomes a sublime wonder that places the observer in the midst of an overwhelmingly vast, lonely space, while evoking pleasure that such a spectacle can kindle the imagination. This evocation of the sublime underscores Lynette Wallworth's immersive video installation *ReKindling Venus (I)*, which will be playing next door at the planetarium in June (2). This piece is based on the artist's continuing preoccupation with the complexity and fragility of the Great Barrier Reef as well as an attentiveness to the ways in which gaze-enhancing technologies play with light and shadow. The collaborative spirit that characterized scientific efforts to track the transit of Venus resonates with Wallworth's working relationship with marine biologists and, importantly, with the urgent need for a transdisciplinary, transborder response to climate change.

These artworks are re-presented at the Royal Observatory not as a means of explaining scientific principles or illustrating key events but rather as creative responses to the worlds around us, made visible via scientific modes of inquiry. Their emphasis on the sublimity of these worlds, and the sheer sensuousness of seeing, lends a Romantic glow to what may otherwise appear to be somewhat naturalistic, empirical accounts and provides a useful reminder of the wonder and excitement that underscore so much of what scientists do. More tellingly for exhibitions such as *Measuring the Universe*, they possess a powerful, visceral appeal that serves scientists well by reaching and engaging the general public.

#### References and Notes

1. <http://rekindlingvenus.com>.
2. *ReKindling Venus* will play at the planetarium Thursdays through Sundays, 7 June to 6 July 2012.

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